POPULAR PHOTOGRAPHY

HOW TO MAKE GREAT PICTURES

ANY CAMERA ANY LENS

How to get the glass you crave to work with your own DSLR or ILC P.60

SPECIAL REPORT

THE NEW Black&White

Three top landscape shooters reveal their secrets, from setup to software, for amazing photos in every shade of gray P.43

FULL TEST P.63

LEICA M MONOCHROM

A full-frame rangefinder that shoots only black-and-white! How cool is that?

+ **TESTED**

- Fujifilm X-E1
- Sigma 35mm f/1.4 Art lens
- Pentax 50mm f/1.8...and more!

Your Best Photos P.28

Shooting in Aspen P.36

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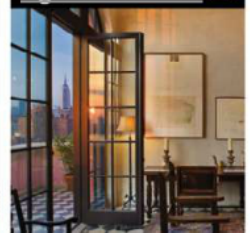
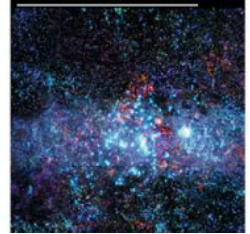


Invent a Universe P.40



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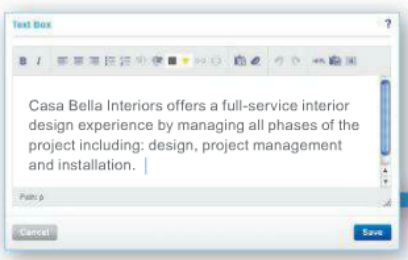
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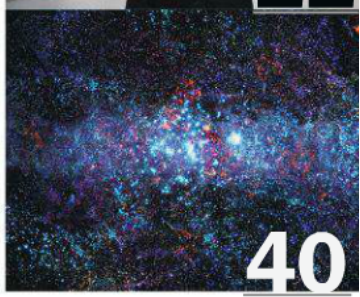

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SUBSCRIBER COVER: CHRIS CLOR. THIS PAGE: CHRIS LYNCH (WOMAN); FABIAN OEFNER (LIGHTS). PREVIOUS PAGE: CHRIS CLOR (LANDSCAPE); CHRISTIAN KOBER (MASKED MAN); KRISTIAN CABANIS/ROBERT HARDING (WOMAN); SYLVAIN GRANDADAM/ROBERT HARDING (PARADE); SATOSHI (SONY).

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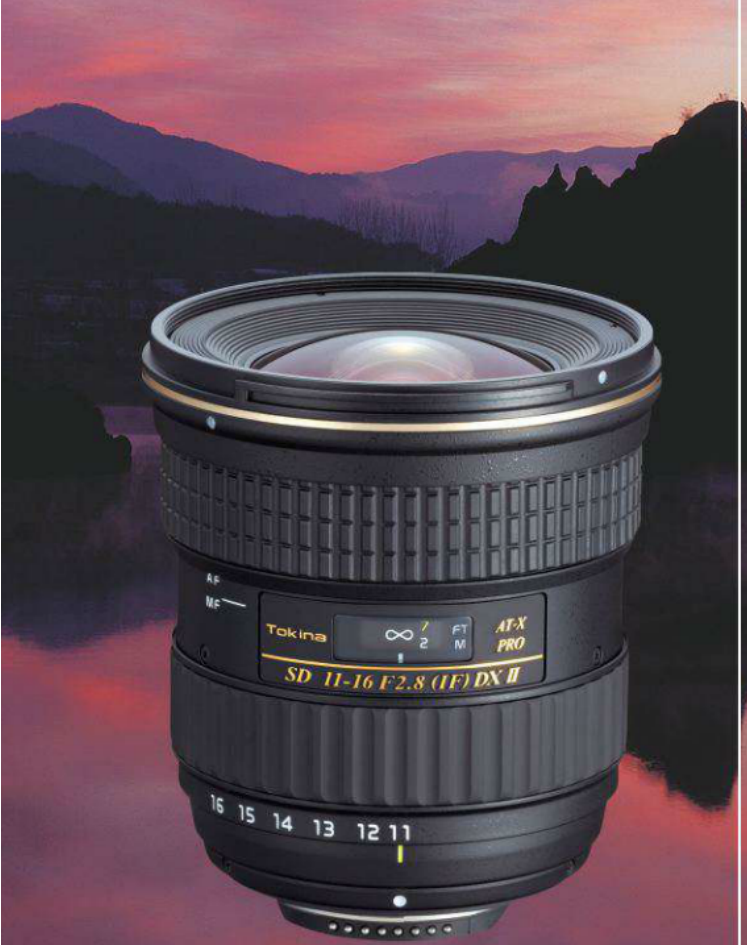

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Mastering Monochrome

There's something about black-and-white that seems to bring out the philosopher in photographers. Monochrome is essentially metaphorical, rather than literal—it doesn't so much record the world in visual terms as it does abstract and transform it. To some extent, that's true of all photography, but by its very nature black-and-white forces you to see in an unusual way. At any rate, the most accomplished practitioners of black-and-white tend to put tremendous thought into the ideas behind their craft.

And they like to talk about it, as Senior Editor Dan Richards discovered when reporting this month's feature story, "The New Black-and-White." His interviews of three of the best landscape artists working in monochrome today turned up more thought-provoking ideas and useful advice than he had space to devote to the article.

"I strongly recommend choosing either black-and-white or color, but not working in both—at least not for the same body of work" photographer David Fokos told him. "I feel that they are so very different and that each requires such a different way of looking at the world that to work with both at the same time results in neither being done well."

All three of these photographers recommend training yourself to see compositions in terms of black, white, and gray. If your camera can manage it, start by displaying images on the LCD in monochrome while capturing color RAW files to convert later. As Chuck Kimmerle notes, drastic differences in color may end up being nearly the same shade of gray in monochrome, and only intensive practice will give you a feel for previsualizing in black and white.

And if you have a stockpile of b&w negatives, Kimmerle added, there's a world of photographic craft waiting for you. "It's a testament to the power of digital imaging that so many black-and-white film shooters are scanning their negatives, and using programs like Photoshop to tweak the final prints."

Ultimately, though, what makes the work of these photographers so compelling isn't simply their skill, but the deeper ideas behind it.

"Your camera does not record emotion. The job of the photographic artist is to work with the camera's image, to create the drama and add back the emotion," said Fokos. "Sometimes this means manipulating the image so that, while it may not be a faithful visual rendering, the result may be a more accurate *emotional* rendering. You may even want to use your image to convey a *completely different* emotion. The choice is yours—that is what making art is all about."

Miriam Leuchter

NEWSSTAND Satoshi photographed the Leica M Monochrom for our test report on page 63, then, for our cover, converted his photo to—what else?—black-and-white.

SUBSCRIBER Chris Clor lengthened his exposure for this Isle of Skye landscape by shooting through a 0.3 neutral-density filter. For more on b&w, turn to page 43.

POPULAR PHOTOGRAPHY

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CLASSIC STREET SHOOTER

Our assistant online editor, Dan Bracaglia, took this candid portrait of his girlfriend Cheyenne Morgan outside of New York City's Bowery Ballroom using a Leica M Monochrom and a 35mm f/1.4 Leica Summilux-M ASPH lens. His exposure: 1/30 sec at f/1.4, ISO 6400. For our full lab and field test of this full-frame digital rangefinder for black-and-white purists, see page 63.

DAN BRACAGLIA

MATIX

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NEXT

THE HOTTEST NEW STUFF AND THE TECHNOLOGY TRENDS BEHIND IT

FAST, WIDE OLYMPUS PRIME LENS FOR ILCS 12

ON-CAMERA FLASH GETS SWEET MODIFIERS 13

A ROUNDUP OF APPS TO PRINT THOSE SNAPS 14

WE WANT THIS

LED BLAST

An LED flood with no shortage of power

COOL, COMPACT, and efficient, LED lighting is becoming more and more attractive with each technological advancement, and Rotolight's Anova is a lustworthy example. This bi-color LED floodlight has a 110-degree beam angle and pushes the tungsten-bulb output equivalent of 1,000 watts while drawing only 38 watts of power. A tessellating design enables a honeycomb array with multiple units.

But the Anova's most interesting feature may actually be on your iPhone. In addition to wired DMX control, built-in Wi-Fi enables remote control of brightness, color temperature, and system settings from an iDevice via Rotolight's Magic Eye app. This even lets you sample the color temperature of ambient light, which the Anova then reproduces—so you can match the color cast from that gritty street location in the studio later.

ROTOLIGHT ANOVA

- Bi-color LED floodlight
- 3150K–6300K
- Built-in Wi-Fi
- 110-degree beam angle
- IOS mobile app
- $2,540, street
- rotolight.com

MICRO LENS

A wide, fast prime for street shooters

FASTER THAN its f/2.8 counterpart by a stop and a third, Olympus' new 17mm f/1.8 lens for Micro Four Thirds ILCs seems to have more in common with its tiny and robust 12mm f/2. Though it lacks an ED element, the new lens, a 34mm equivalent, has the same MSC (Movie and Still Compatible) technology that powers the 12mm's quick and quiet autofocus.

It also has the same snap-focus ring that applies damping, reveals distance and depth-of-field scales, engages end-stops for focus travel, and switches the camera to manual focus mode when pulled back. For more efficiency, the MSC moves only one element while focusing.

With nine elements in six groups (including one high-refractive and two double-sided aspheric elements), the lens is also coated to reduce flare. Given its big maximum aperture and fast autofocus technology, this new lens is sure to appeal to street photographers.

Measuring just 1.4 inches long, the metal-barreled 17mm f/1.8 is compatible with the Olympus VF-1 optical viewfinder, originally designed for the 17mm f/2.8.

Olympus M.Zuiko 17mm f/1.8 MFT lens
$499, street
www.getolympus.com

LITTLE MARVEL

Elinchrom's diminutive strobe packs a punch

ELINCHROM'S D-LITE monolight strobes have always impressed us with their generous feature sets, compact proportions, and relatively bright output. Now, the Swiss engineers have reworked its most compact 100-WS unit, upgrading its wireless capabilities.

The Skyport RX radio receiver in the new multivoltage D-Lite RX One now lets users control the output of up to four D-Lite groups across eight frequencies in 1/10-stop increments, as well as turn modeling lights on or off, all from the system's optional shoe-mount transmitter. Want more control? Check out "Inside Tech," at right.

Elinchrom D-Lite RX One
$226, estimated street
elinchrom.com

NEWS FEED

> Digital Camera Raw 4.02, Apple's latest RAW processing support software for Aperture 3 and iPhoto 11, is now available for eight more cameras. Download it for free.

INSIDE TECH

Wi-Fi, Too

In addition to the new radio control options, Elinchrom RX One strobes can be controlled wirelessly from a computer or from any of your iOS devices. Controlling the strobe with your iOS device requires the EL-Skyport Wi-Fi module ($269, street), and for computer control, you'll need the EL-Skyport Transceiver RX ($105, street).

NEWER DUO

Two classic Canon lenses get notable updates

AT ALMOST $1,500 (street), Canon's new 24–70mm f/4L IS lens may prove a tough sell to owners of the popular 24–105mm f/4L IS ($1,149, street). But it might win you over with a 1:1.4 macro function, accessed by pulling the zoom-lock switch forward and rotating the zoom ring past 70mm. Its hybrid IS offers a claimed 4 stops of stabilization (2.5 for macro). Since it's slower, the new lens is smaller, lighter, and less pricey than the non-IS 24–70mm f/2.8L ($2,299, street).

A new 35mm f/2 IS USM lens is the latest in Canon's recent string of wide, stabilized primes. Like the 24- and 28mm f/2.8 lenses that preceeded it, it costs $849 (about $500 more than its aging nonstabilized predecessor).

Canon 24–70mm f/4L & 35mm f/2 IS
$1,499 and $849, street
usa.canon.com

FLASH FLAIR

Fully tricked-out modifiers for your hot-shoe flash

THE SPINLIGHT 360 system of accessory flash modifiers consists of a creatively designed set of adapters that can alter the quality of light emitted from most current shoe-mount flashes in an unusually wide variety of ways. For instance, it can broaden, narrow, soften, harden, bounce, vignette, or gel your light.

The clear dome (pictured) throws a bare-bulb-like output and is one of nine such light-modifing adapters included in the Spinlight 360 Extreme kit ($149, street). Also included: a universal mounting ring, color-balancing gels, and gel-protecting discs.

SpinLight 360 flash modifiers
In kits starting at $89, street
www.spinlight360.com

NEWS FEED

> Bryce Bayer, Kodak scientist and inventor of the Bayer filter, died at age 83, leaving the photo world a more colorful place than he found it.

> Popular photo curation and sharing website 500px has released an app for the iPhone. Unlike its iPad and Android siblings, the iPhone app does not allow users to upload their own images.

> After releasing the "Black Marble" photograph of earth in December 2012, NASA discovered that the cause of the bright splotches across Australia was bushfires in the Outback.

> Cosina announced that it will bid *auf wiedersehen* to its M-mount Zeiss Ikon rangefinders. The line of film cameras was launched at the 2006 Photokina.

> Photo editing app Snapseed is now free and available for iOS—and now for Android phones, too.

New Software

DxO Optics Pro 8

DxO labs is renowned for its top-notch image science; its DxO Analyzer software is even used in our test lab. DxO's latest editing suite, Optics Pro 8 ($169, standard; $299, deluxe; dxo.com) adds Retina display support, selective tone-adjustment sliders, a reorganized palette layout, and a new highlight and shadow recovery tool. A "smart" saturation option now factors in vibrancy.

THE LOWDOWN

CLOUD FEATURES

Adobe's Creative Cloud is the monthly fee-based service for access to its Creative Suite software, plus extra apps and tools. Now it has some exclusives for Photoshop: Smart Object support for Blur Gallery and Liquify, which could prove extremely useful. Adobe won't say if or when regular Photoshop will be updated, but these tools could draw some converts.

FROM PHONE TO WALL
Postal Pix, like all of these apps, helps you order prints right from your smartphone.

PRINT IT

MANY OF US take snapshots with our phones: We post them to Facebook, Instagram, and Twitter, we email them to Grandma and use them as wallpaper on our phones. But there really is nothing quite like holding a print. So how to get the pixels from your phone to your wall (or fridge)? Try these phone-to-print apps that make the process of ordering prints from your smartphone or tablet that much easier.

Ink Cards Android, iOS Ink makes specialty 5x7-inch cards printed at 300 dpi for $2 each (including postage). You can choose from more than 100 customizable designs and add personal messages; a "thoughtfulness engine" checks Facebook to notify you about upcoming birthdays.

Photos To Art iOS only This streamlined app is meant to make wall-worthy prints from your Instagrams (or from your Camera Roll). Prints range from 8x10 to 20x30 inches on canvas, wood, or poster paper—the app's visualizer even lets you see what your photo will look like on the wall.

Postal Pix Android, iOS This app lets you have prints shipped directly to your house on aluminum or luster sheen paper with a 24- to 48-hour turnaround. Or go kitsch with mouse pads and custom iPhone cases printed with your photos. Includes mounting tape and magnets.

Shutterfly iOS only Formerly known as MoPho, the app, which was recently acquired and re-named by Shutterfly, helps you make everything from photo gifts to square Instagram prints. It also serves as a conduit to Shutterfly, letting you upload to the site and view your Shutterfly albums anywhere.

Walgreens Android, BlackBerry, iOS
Order prints (all versions), posters, and canvas prints (iOS only) for pickup at a local Walgreens. Editing functions include crop, contrast, saturation, and redeye removal, and the PrintWorthy feature can print your Facebook photos—comments and all.

NEWS FEED

> Twitter is jumping on the filter bandwagon—it's introducing retro filters to its mobile app.

> Sony announced the Smart Skin Evaluation Program, sensor tech that can detect blemishes before they surface. Already used in the pro beauty industry, the sensors may soon be used in consumer products, too.

> The game of hot-potato continues, as Panasonic plans to sell Sanyo, the battery and camera manufacturer that it bought two years ago.

> At Miami's NADA art fair, the W/ gallery sold 24 disposable cameras, each containing undeveloped shots by a photographer or artist. For $1,000, you could end up with beautiful images courtesy of a favorite photographer—or photos that look like the camera was handed off to a child.

TOOLBOX

TRIGGER PULL

A motion capture system gets the shots you can't

HAVE A thieving squirrel in your yard? With Quantum's TriggerSmart, you can catch that critter as he raids your bird feeder. The kit ($398, street) uses an infrared transmitter and receiver to fire your camera's shutter when a beam is broken. You can also use the light-intensity sensor to catch peak moments at a fireworks show or the sound sensor to capture balloons at the moment they burst. Quantum says most cameras will work with the included trigger cable. The kit also includes the controller, IR/ light-intensity sensor receiver, IR transmitter/sound sensor, two mini tripods, two control cables, and a 2-degree baffle.

1.6

Estimated market, in billions of dollars, for personalized print products in the U.S. in 2012.

30

Percentage of buyers that created and ordered these products with a smartphone.

SOURCE: InfoTrends, 2012

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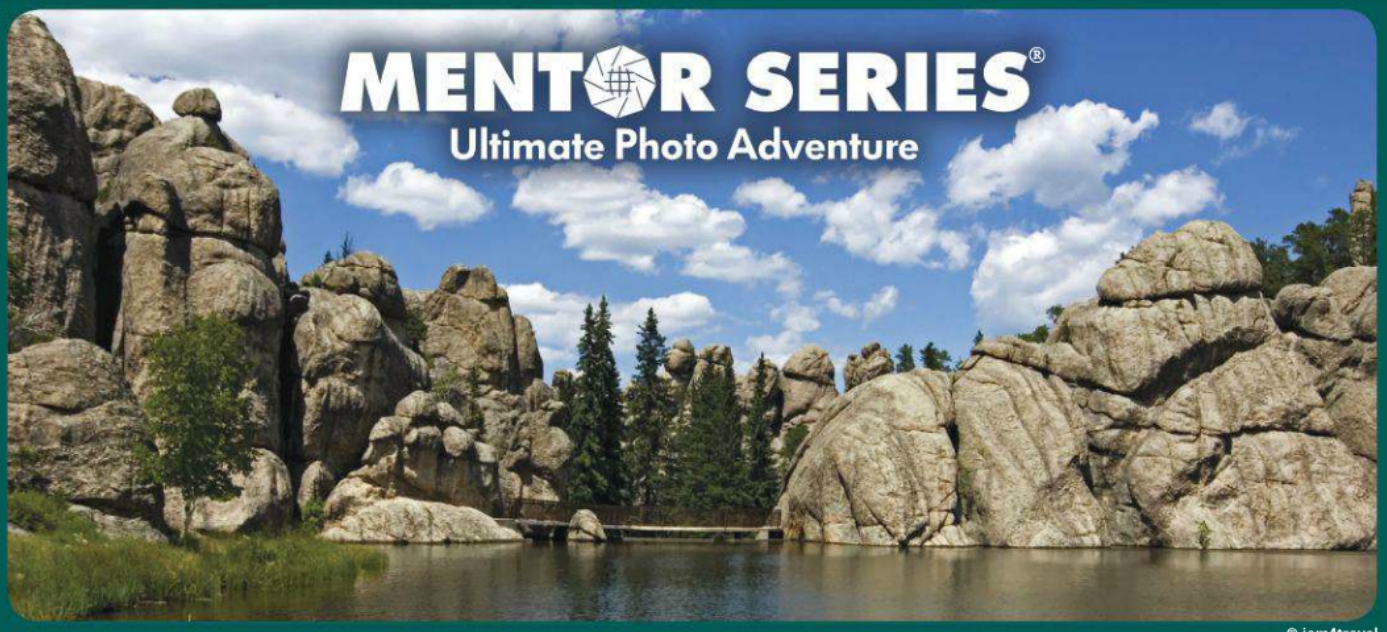

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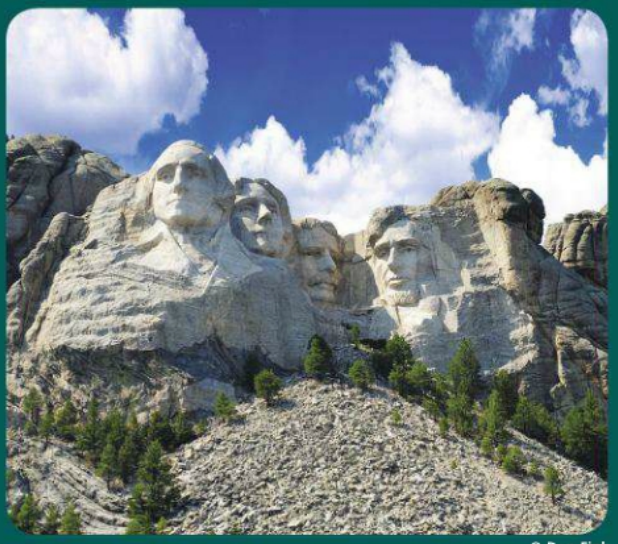

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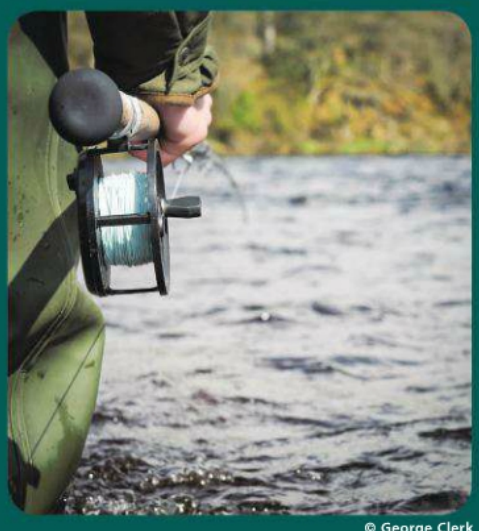

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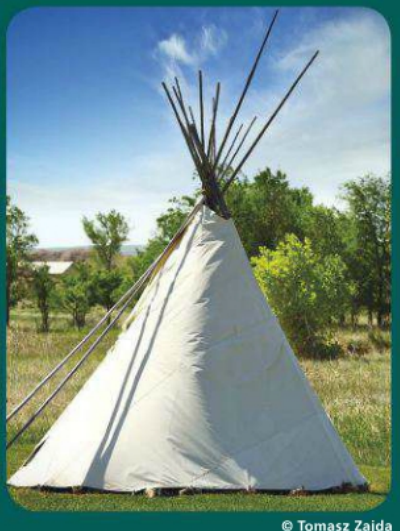

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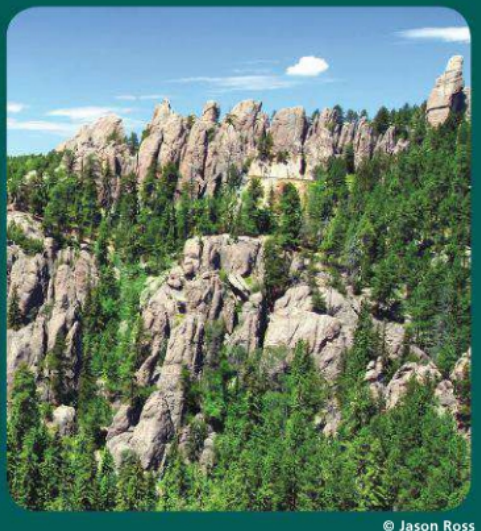

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South Dakota

June 21-23, 2013

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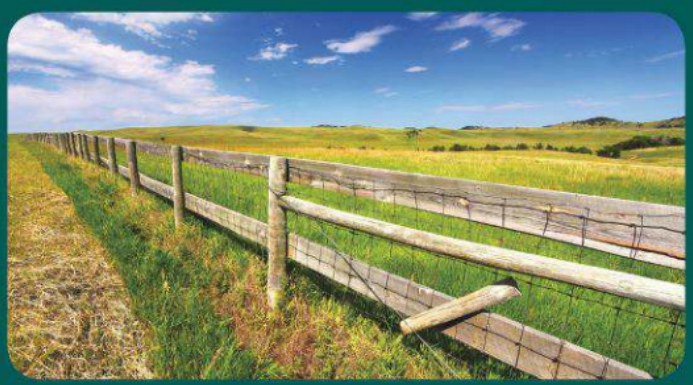
Enjoy a visit to the Black Hills Wild Horse Sanctuary, a haven for 500 mustangs. Fill your frame with action shots as the powerful animals run free, bucking onto their hind legs, shaking their manes, and beating up dust with their hooves.

History predates the Wild West in the Black Hills; thousand-year-old petroglyphs on cave walls show evidence of the earliest Native American civilizations. Consider an angle that allows the shadows to put the carvings and drawings in high relief.

A trip to this region is not complete without visiting famous Mount Rushmore. Use the marvelous early morning light and your mentors best advice to your advantage as you photograph along the trail and finish at the base of the impressive presidential mountain carving. The invaluable experience gained during a weekend of total photography immersion in South Dakota will be evident from the plethora of useful information you gather and the spectacular images you make along the journey. Sign up today!



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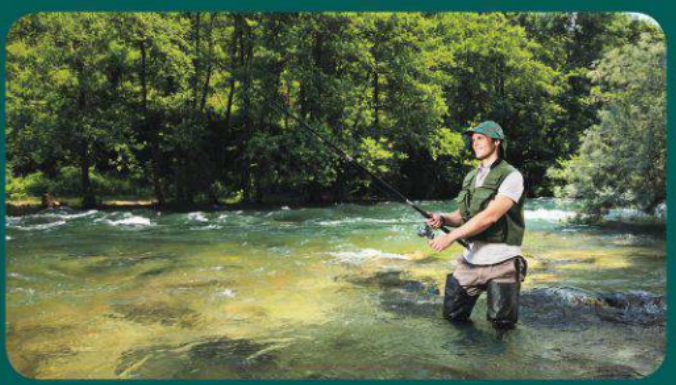

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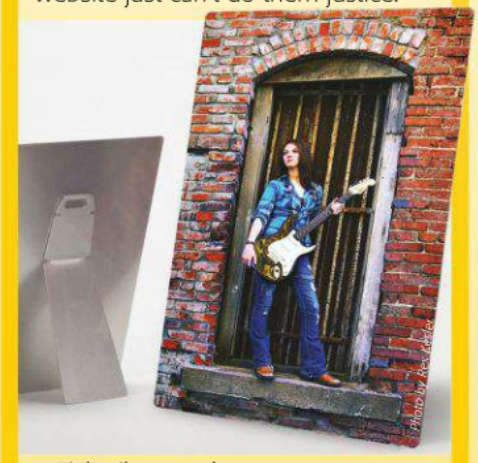

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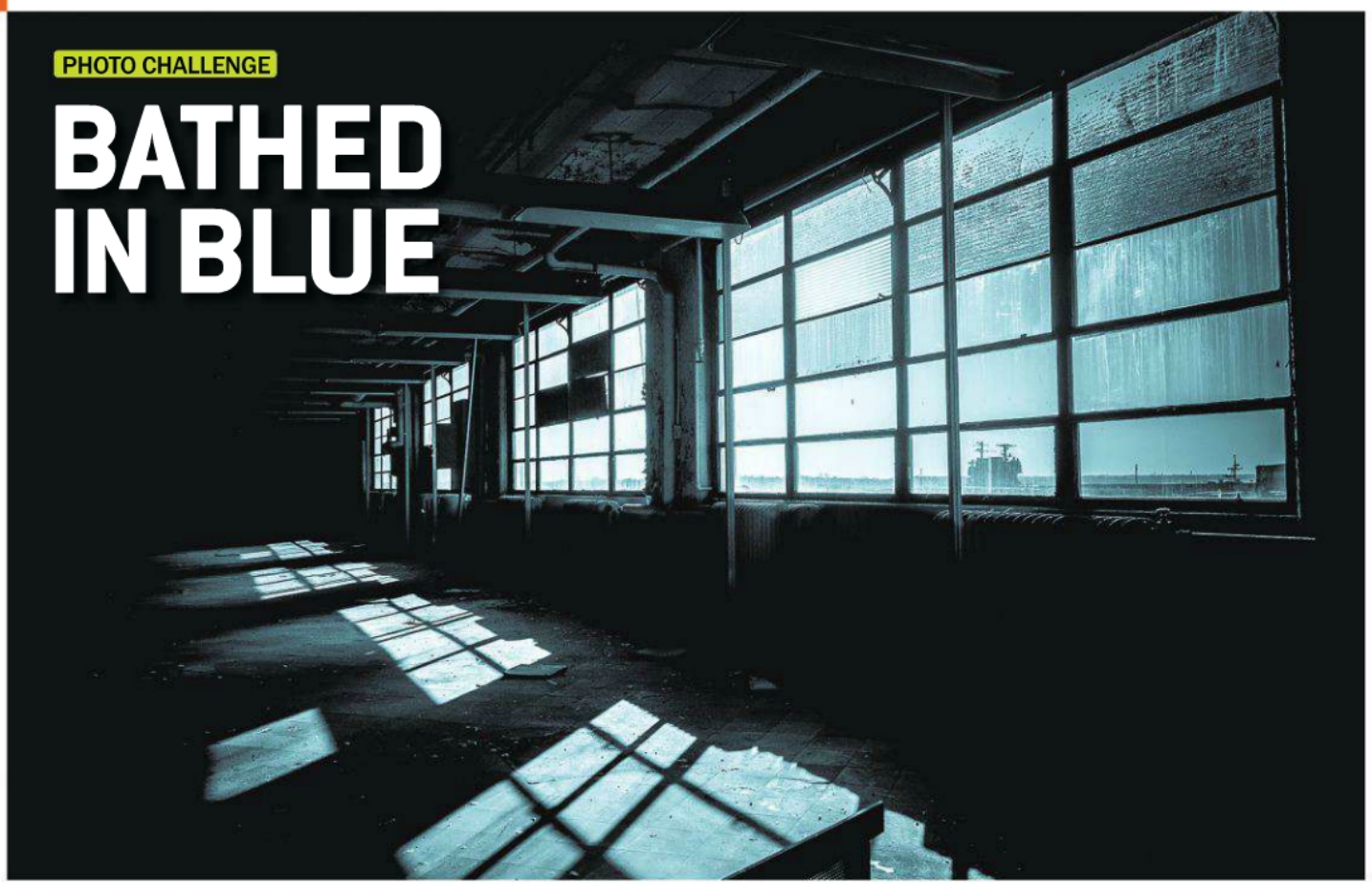
PHOTO CHALLENGE

BATHED IN BLUE



A photographer finds bliss in the abandoned

THERESA STIGALE is no stranger to abandoned buildings. She's walked through and photographed many of them, both in her real estate business and as a photographer/guide for Hidden City Philadelphia. So while on a tour of the Philadelphia Navy Yard, she had a very specific notion of what she was looking for. "I was always attracted to the historic multi-paned, steel-sash window bays on concrete sills," she says.

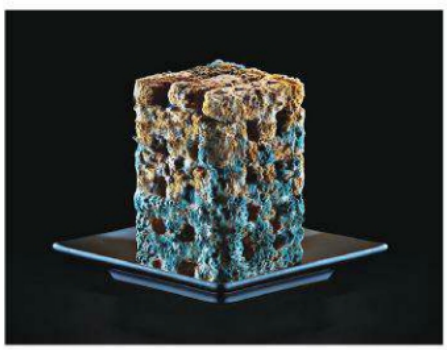
Building No. 83, one of the last in the yard still unused, served as the subject for Stigale and her Sony Cyber-shot RX100 compact. Converting to black-and-white with a cyanotype hue and vignetting in Adobe Photoshop Lightroom 4, she added drama, answering our call for your best naturally lit indoor scenes.

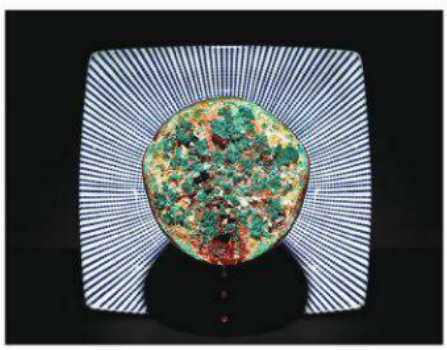
Stigale's exposure with a Sony RX100 set to 28mm (equivalent): 1/250 sec at f/4.9, ISO 125.

—Matthew Ismael Ruiz

THERESA STIGALE

NEXT PHOTO CHALLENGE On page 43, three masters of b&w landscapes share their secrets. Send us your best monochrome vistas by February 28; you could win $100 and your photo here. Go to PopPhoto.com/contests for rules and how to enter.





Plated Waste

Beautiful photos about an ugly issue

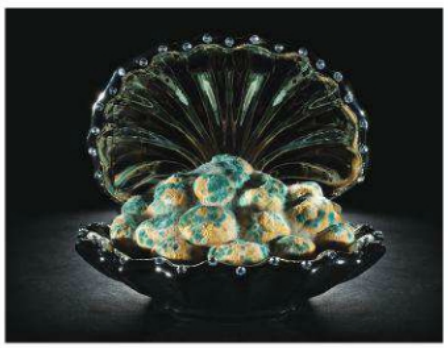
GREAT PHOTOGRAPHY series often begin with issues that cry out for public attention. And the more intricate the issue, the more difficult the photographic challenges. For Klaus Pichler, who began his "One Third" series out of concern for global food waste, the difficulty included living with maggots and flies.

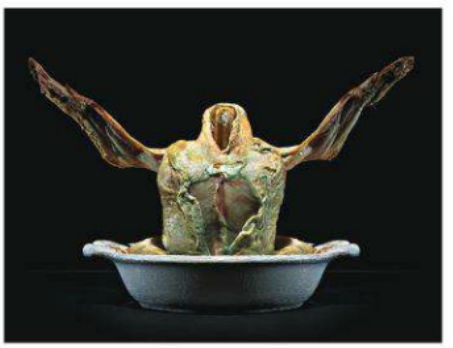
Pichler first became interested in his subject after reading a 2011 United Nations survey stating that one-third of food globally goes to waste. Bothered by the lack of public awareness of this problem, the pro photographer dropped both his personal projects and commissioned work in order to illustrate it creatively—shooting food products in various states of decomposition.

Styled like editorial food shots, his goal was to create beautiful

Photographer Klaus Pichler is based in Vienna, Austria. See more of his work at kpic.at.

KLAUS PICHLER (9)





Pichler's subjects, clockwise, from top left: watermelon, eggs, chicken, tomatoes, choux pastry buns, pomegranate, white asparagus, pre-fried vegetable sticks.

images that suggested the reality of waste. "I consciously did the project from a consumer's perspective, so I went to a lot of supermarkets," he says.

Pichler's shoots depended on the products and the time it took for them to decompose. For the food to look interesting, he'd wait two to three weeks—sometimes more (potatoes) or less (strawberries). Storing his subjects in his bathroom and shooting in an improvised studio in his living room made it difficult for him to remain in his own home.

"Imagine living with a rotting chicken for two weeks, along with maggots, flies, and worms," Pichler says. Though he felt it important to coexist with the project, he spent a lot of nights at his girlfriend's apartment.

For most sessions, his setup was simple: just a few lights and his Pentax 645D. Pichler learned a lot about food styling and photography in the process. But his main challenge, he says, was "trying not to puke."

He created 73 images in all, some of which will be on view at Vienna's Anzenberger Gallery in mid-2013. Though relieved to no longer be working on the project, he hopes his images will make people stop and think. "It took me back into all of the aspects of food waste," he says, "and the alarming contrast with global food shortage." ***—Lori Fredrickson***

CHRIS LYNCH

NASA's Star

Michelle Murphy photographs the U.S. space agency

After nearly nine years, fine-art photographer Michelle Murphy is still over the moon about working at NASA's Glenn Research Center in Cleveland, OH. See her photos online at michellemarie murphy.com and PopPhoto.com/murphy.

How does a fine-art photographer wind up at NASA?

As a student at the Cleveland Institute of Art, I was interested in how the public hasn't heard much about the space program, and I wanted to celebrate women in the industry. As part of my thesis project, I went to space camp for adults. An engineer I knew told me about the photo lab at Glenn Research Center, and I interviewed the day after my thesis review.

What do you typically shoot?

Everything from corporate, visa, or passport portraits, to event photography, hardware research, facilities, and employees at NASA. These people are doing pages and pages of research and reports related to aeronautics and space exploration, and it's my job to summarize their work into one image. When I can direct a photograph that involves a person, the project they're working on, and the facility that it was tested in, that's my favorite kind of shoot.

Is there a house style at NASA?

There's certainly a NASA aesthetic. They like NASA blue—it's like an LED blue—and lots of depth of field. Researchers want to be able to see every aspect of their project, and you can zoom into any of my images and see how that piece of equipment was engineered. I want to make artistic NASA photography, so I figure out how I can contribute to their aesthetic while including my own perspective.

How important is lighting?

I often shoot in labs filled with electrical equipment and cords that I can't unplug or even touch, so I have to use lighting to emphasize certain aspects while making sure others fall into the background. In one image of a lunar wheel, I used lights to sculpt its three-dimensionality—its exoskeleton, mesh surface, and tread. I photograph a lot of metallic objects in metallic facilities, which is difficult lighting-wise, but the challenge makes it fun. Shooting for depth of field requires quite a bit of lighting.

What gear do you tote?

I always carry a Nikon D3x, 24–70mm f/2.8G and 17–35mm f/2.8G ED Nikkor lenses, and two Nikon SB-900 Speedlights. My work also sometimes requires a 60mm f/2.8D AF macro and a 70–200mm f/2.8G, Broncolor heads and power packs, colored gels, and remote flash triggers. For big shoots on location, I use power-pack strobes.

What postproduction do you do?

It can vary, but I do quite a bit. There are things that don't need to be in the picture, like dirt, scuff marks, and cords. I've even removed a post-testing patina from hardware to make it look like it did before the test.

How does your NASA work inform your fine-art projects?

NASA led me to macro photography. I'm currently exhibiting and publishing a portfolio of macro images of beauty tools, and scientific observation and interpretation have inspired how I study the beauty industry. I use makeup as a medium, conducting experiments in my studio. The images look like lunar landscapes, atmospheres, planets, and sometimes, the ballistics work that they do here. Maybe not being able to play with materials at NASA has carried over into my personal work.

Would you travel to space?

In a heartbeat. The lunar landscape relates so much to photography. A lot of the later Apollo images are shot in color—but you forget that until you see the American flag.

—Interview by Julie Leibach

NASA Behind the Scenes

Download the free PopPhoto Interactive app from the app store and point your Android or iOS device at this page to see Michelle Murphy's photos.

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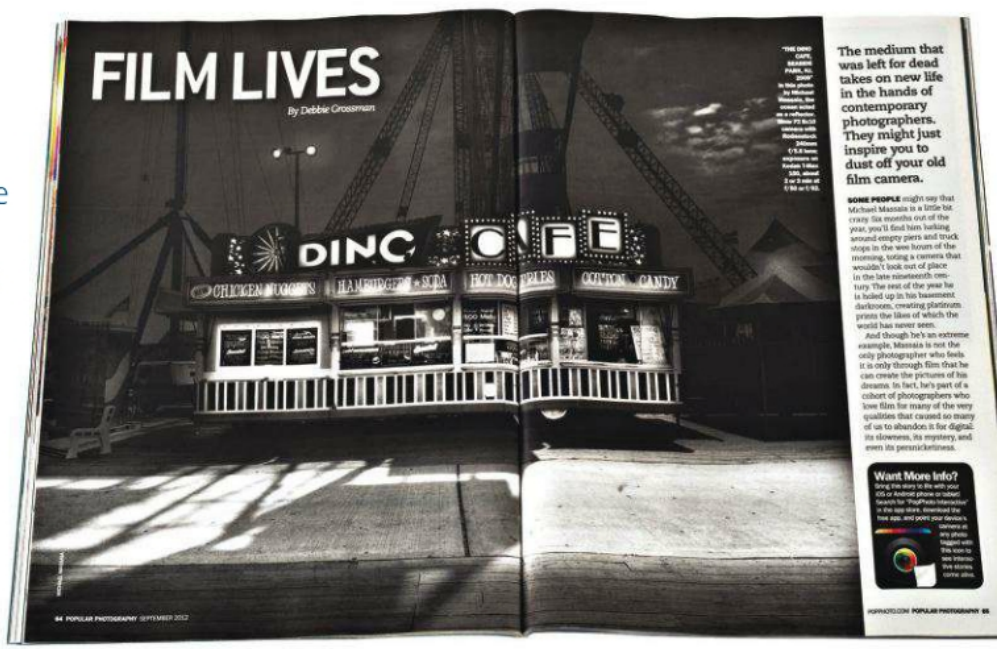
Chem Scare

I was glad to see the article on film by Debbie Grossman (September 2012). Another important issue with film is rampant chemical phobia. The Photographers' Formulary in Montana quit selling mercuric chloride because it might be used to make illegal drugs, and chemical dealers are now leery of selling gallic acid, a developer, because a handful of people have used it to make mescaline.

Barry Bush
Cody, Wyoming


FILM LIVES
By Debbie Grossman
The medium that was left for dead takes on new life in the hands of contemporary photographers. They might just inspire you to dust off your old film camera.
Want More Info?

I HAVE READ reviews of Sony's reflex-type cameras with the "translucent" mirror technology that alluded to an excessive battery consumption problem. It was suggested that these cameras are "battery hogs" in comparison with the older Sony DSLRs or with others with conventional reflex mirrors. Have your reviews confirmed this excessive battery consumption? I own an older Sony DSLR and am considering an upgrade.

Jerry D. Sternstein
via PopPhoto.com

EDITOR'S NOTE: Though we wouldn't call them battery hogs, it takes a lot of juice to push real-time image data to a 2.4-million-dot electronic viewfinder, so Sony's SLTs do use significantly more power than its older DSLRs. Still, according to the official specifications for each camera, Sony's Alpha 99 got upwards of 200 more shots from a single charge than Canon's EOS-1D X did in LCD live-view mode.

DAN BRACAGLIA

I OPENED my December 2012 issue to page 74 ("Best Gear Now"), and there was another of those "photo backpacks" that are next to useless unless you live in New York City and can lay the pack down on a subway seat or restaurant chair. Under the conditions where people want to backpack their cameras, there's often no place to lay a bag down except in mud, wet grass, or other icky stuff that you don't want to put back against your body! I haven't seen a photo backpack that made much sense since the original large and small ones that Domke introduced back when we were way younger.

Robert A. Compton
Breinigsville, PA

EDITOR'S NOTE: Several backpacks built for carrying photo gear (such as the Lowepro Photo Hatchback we covered in September 2012) open on the rear side, where they rest against your body—even if you lay these packs face-down in the mud, your back, your gear, and your lunch will all stay clean.

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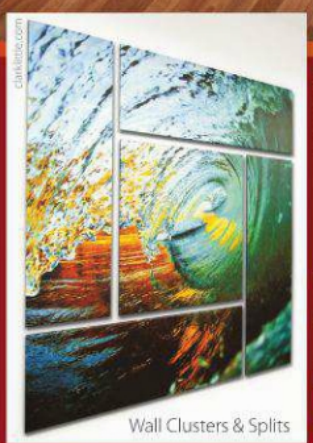

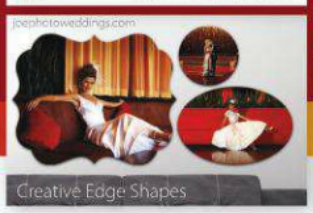

"And here we have it -- a quadtych of my 551 mega-pixel multi-row panoramic of Bryce Canyon from the winter of 2010. This print is 14 x 7 feet and there is NO pixelation. If you stand even a few inches away it's perfectly clear and sharp. The resolution on this is stunning. My good friends at Bay Photo Lab spent the last few days creating this high gloss print on metal for my gallery at Aperture Academy."

- Stephen W. Oachs, apertureacademy.com

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Tone Dome

EVER WATCH pro shooters at outdoor sporting events like football or baseball? You may notice that some of them periodically raise a handheld device and stare at it briefly.

They're not checking their texts. They're taking a reading with an incident light meter.

Why, in this day of in-the-camera evaluative meters, not to mention LCD playback with histograms, would a photographer use a handheld meter?

Because an incident light meter—that's the kind with a white hemispheric dome—can give you a more accurate reading, faster.

The meters in cameras measure the light reflected from your subject. Even today's "smart" meters can be fooled in a variety of ways. If your subject is light or dark in color, or if there is a bright light source pointing at your lens, or if the scene is seriously backlit, the camera meter can steer you wrong.

But an incident light meter measures light directly, not in reflection. You aim the dome back at the camera position, not at the subject; the meter will read the light striking the dome from 180 degrees all around. It won't be fooled by a white wedding dress against a white wall or by a black cat on a black sofa.

If you're shooting a portrait or still life under studio lights, you must place the meter very close to your subject—right in front of your portrait sitter's face, say, with the dome aimed directly at the camera position.

But in other situations you need not be anywhere near your subject. Those sports shooters, for example, know that the daylight striking their meters is the same intensity as the daylight on the players, and set a manual exposure accordingly.

Why wouldn't those sports photographers use autoexposure? Consider: A baseball player in a white uniform runs in front of a light-colored billboard, or a football player in a black uniform sprints downfield with a background of his black-garbed teammates on the sideline. In cases like these you would get a

lousy exposure—automatically.

The most sophisticated incident meters, like our test lab's Sekonic L-758DR shown here, have so many more capabilities, we might as well call them supermeters. Ours measures flash as well as ambient, either wirelessly or via PC connector **(A)** and can total multiple flash pops. The dome can be retracted with the turn of a ring **(B)** to provide a narrower reading angle—useful for checking intensity of individual lights (it can calculate the EV differential from one light to another) or for photographing flat art. It can be switched to a 1-degree reflected spotmeter whose eyepiece **(C)** even has diopter adjustment.

For super-precise light balancing, this and other supermeters can be set to read in 1/10-stop increments **(D)**. You can get weird numbers such as f/8.3, which translates to about f/9 in conventional f-stops.

The L-758DR connects to a computer via USB port to input an exposure profile of your DSLR. With this, the meter can display dynamic range and high and low clipping points. And a built-in radio transmitter can be used to pop PocketWizards.

Supermeters are pricey—the L-758DR streets for $634, and similar models from other makers are comparably stratospheric. If you feel your work requires the capability of a supermeter, go for it. But for the majority of photographers, even pros, supermeters border on overkill.

If you want incident light reading but can do without all the other gee-whiz, a plain-Jane meter can be had for a lot less. A longtime favorite of ours is the Gossen DigiFlash ($189, street) which provides reflected and incident readings for both flash and ambient, and is tiny enough to slip into a small pocket. Oh, and it has a thermometer, too.

Q&A Micro Matters

Q Is Four Thirds on its way out? Olympus seems to be all about Micro Four Thirds. How does Micro really compare to Four Thirds? ***Ed Ertle***
Martins Creek, PA

A *The Micro Four Thirds sensor is the same physical size as the sensor used in the the Olympus E-5, the sole Four Thirds DSLR now on the market. But Micro Four Thirds cameras have no reflex mirror or pentafinder, and shorter back focus, so they can be smaller and lighter. In our lab tests, several Micro Four Thirds cameras produced higher image quality than the E-5, although the E-5 has a great advantage in ruggedness. Olympus has stated publicly it plans a successor to the E-5, but we're not holding our breath.*

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The Best in B&W

Ditching color to draw attention to form and texture

3rd Place $100 Prize **MICHAEL ERNEST SWEET, 33, EDUCATOR, MONTREAL, CANADA** "I'm always inspired when I'm wandering the streets of New York City. My thought process is quite random—when I'm working the street with my Ricoh, I just shoot. The camera is small, discreet, and very responsive; it allows you to just aim and shoot. I don't do a lot of edits. I want people to feel that sense of compactness that we feel in New York, to see those snippets of the human fragment that are shoved into our faces each and every day as we make our way to and from work or the bodega. I was after the man in the suit; the woman in the dress was one of those surprises that came after—a stroke of luck." **TECH INFO: Ricoh GR Digital IV in monochrome mode; exposure, 1/1250 sec at f/3.2, ISO 383. Contrast adjusted in Nik Software's Snapseed.**

MONTHLY PHOTO CONTEST

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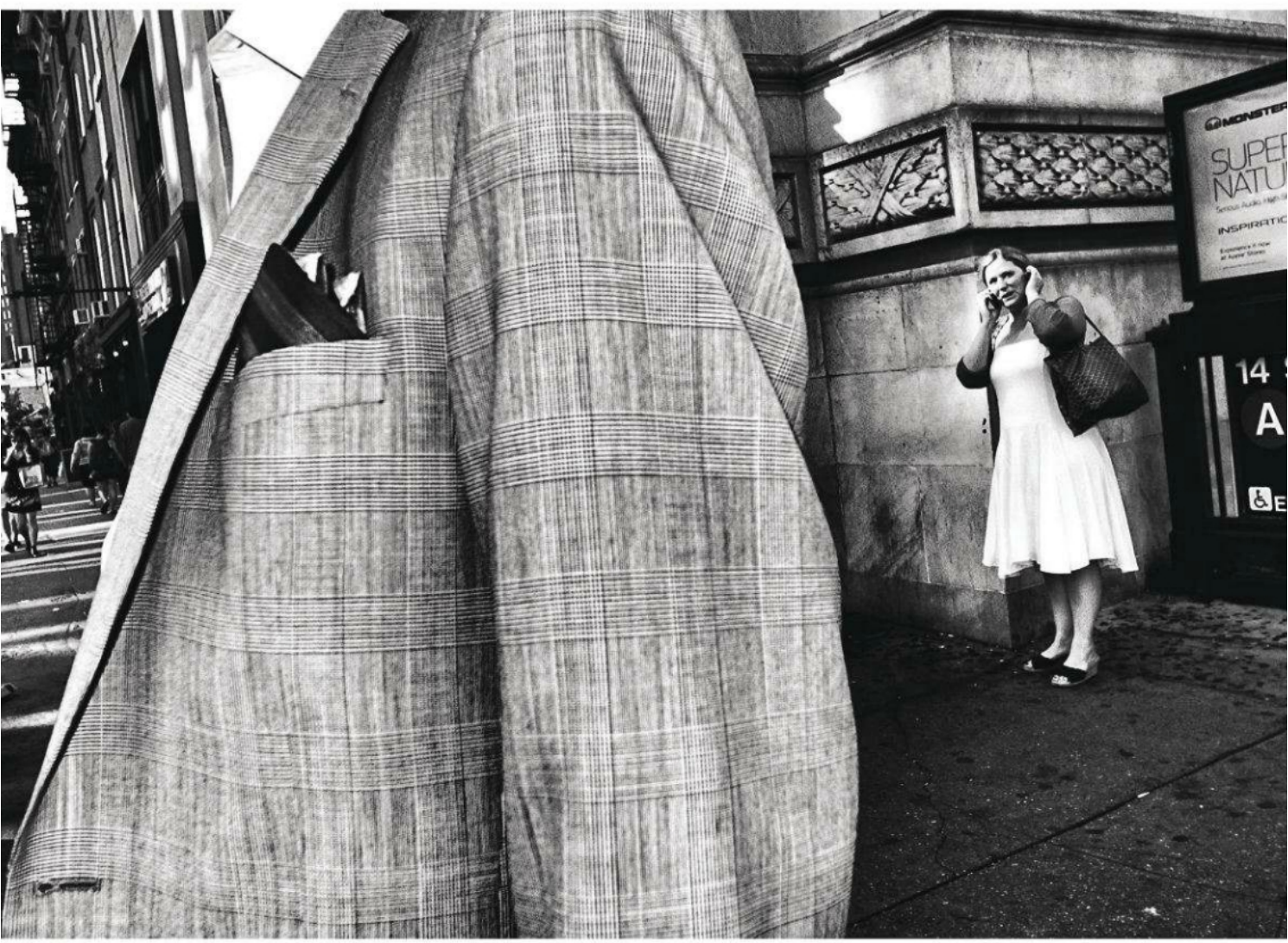
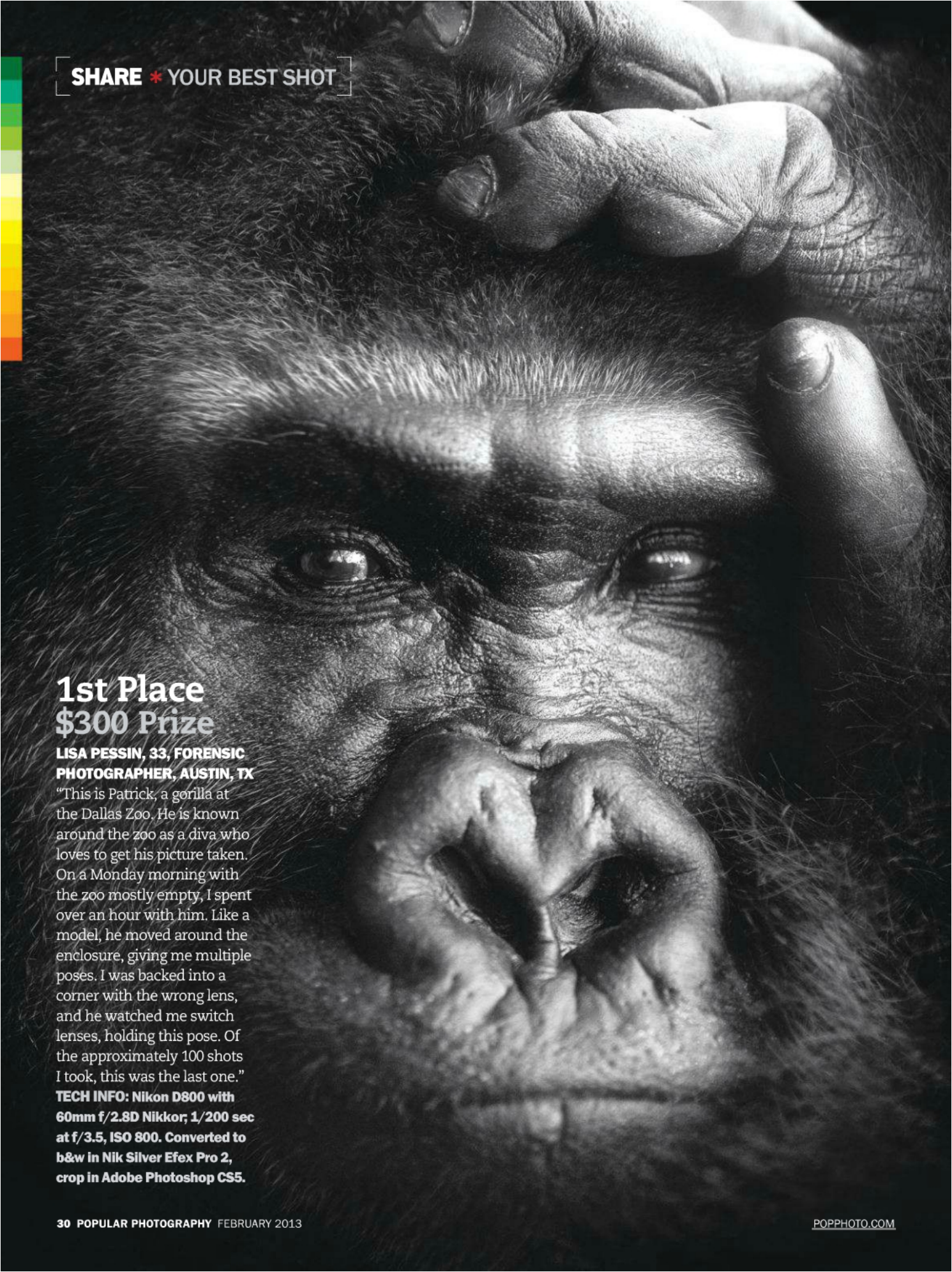


2nd Place $200 Prize

LIZ DOWNING REVELL, 49, PHOTOGRAPHER, CLIFTON, VA

"I took a photo field trip to the Fresh Tulips USA greenhouse in Stevensburg, VA, with the Manassas Warrenton Camera Club. After shooting boldly colored tulips for hours under the morning light from the greenhouse roof, I saw two rows of muted green- and cream-colored ones. I liked their texture—the tulip bud was so tightly furled, it didn't look like a tulip when I viewed it up close." (lizdowningphotography.com)

TECH INFO: Canon EOS 40D with 100mm f/2.8 EF macro lens, Manfrotto tripod and ballhead; 1/125 sec at f/3.5, ISO 100. Tonal and contrast touch-ups and b&w conversion in Adobe Photoshop Lightroom.



1st Place
$300 Prize

LISA PESSIN, 33, FORENSIC PHOTOGRAPHER, AUSTIN, TX

"This is Patrick, a gorilla at the Dallas Zoo. He is known around the zoo as a diva who loves to get his picture taken. On a Monday morning with the zoo mostly empty, I spent over an hour with him. Like a model, he moved around the enclosure, giving me multiple poses. I was backed into a corner with the wrong lens, and he watched me switch lenses, holding this pose. Of the approximately 100 shots I took, this was the last one."

TECH INFO: Nikon D800 with 60mm f/2.8D Nikkor; 1/200 sec at f/3.5, ISO 800. Converted to b&w in Nik Silver Efex Pro 2, crop in Adobe Photoshop CS5.

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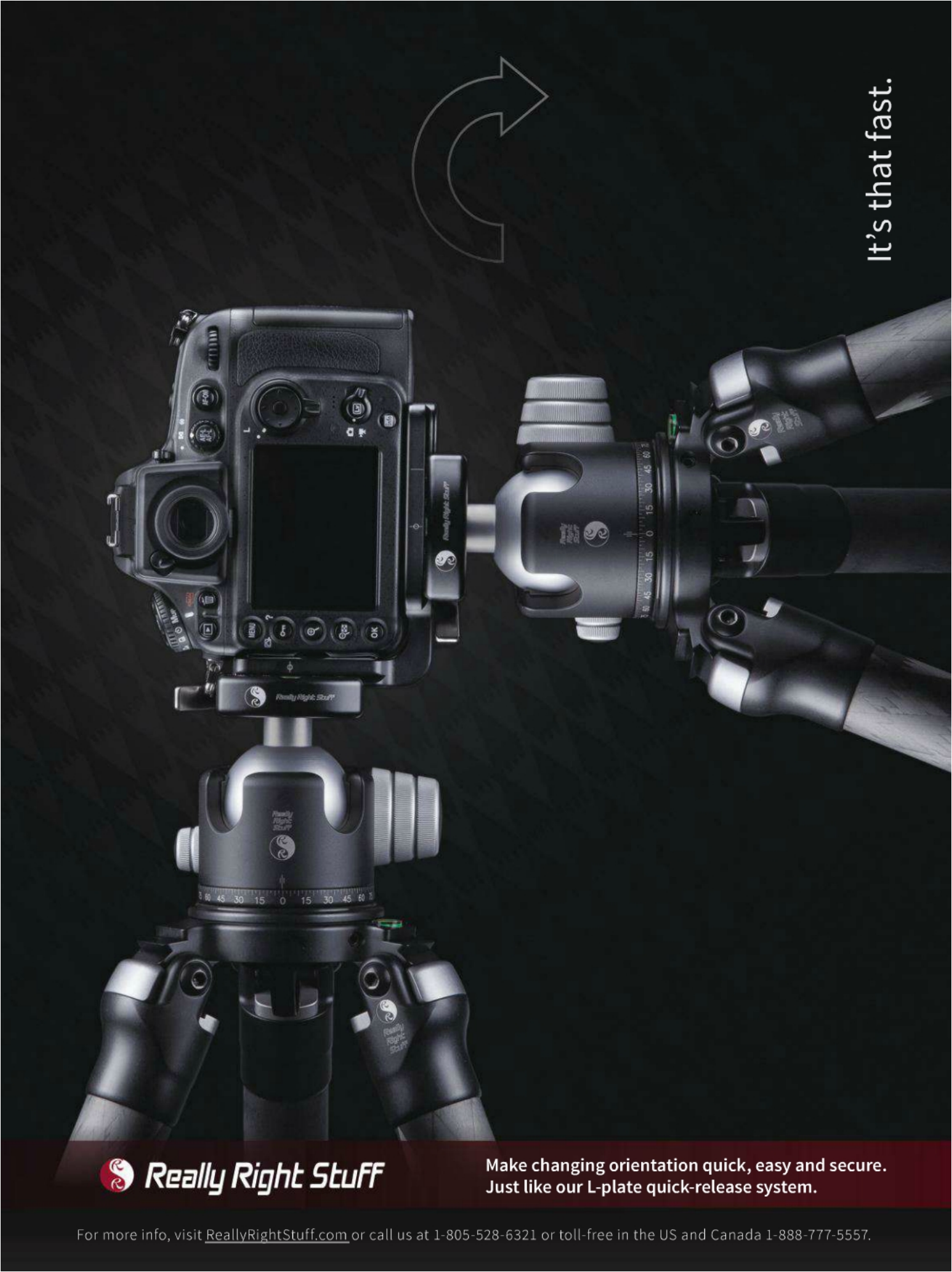
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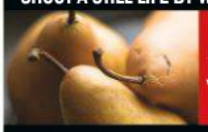

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CAPTURE THE MAGIC OF ASPEN

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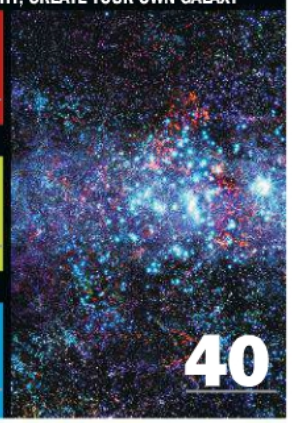
BALANCE LIGHT INSIDE AND OUT

38



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CREATIVE THINKING

ONE-MAN BAND

Depicting an original metaphor for sameness

LINCOLN BARBOUR

THE TEXT for an advertisement promoting a new housing development asked, "What would life be like if everything was the same?" Lincoln Barbour, a Portland, OR-based commercial shooter, took on the creative challenge of answering that question visually in a series of images that included this shot of an all-tuba high-school band.

"The ad agency hired me based on my personal work, which is quiet, subtle, and candid," Barbour says. "So the hardest thing for me was finding my personal voice in the shot

Check out Barbour's personal and professional work at www.lincolnbarbour.com.

while meeting everyone else's expectations."

Barbour's first challenge? Simply finding enough kids who had band uniforms and tubas. Unfortunately, he couldn't. "We had six tubas and ten kids," Barbour recalls. "I had to shoot the same picture three times and move the kids around with the different tubas, and then Photoshop it all together so it looked like one photo."

Working with the agency's art director, Barbour determined that the frames to be composited would need to be captured from the back row to the front in order to get the right overlap. "I shot six people at a time with tubas, and there was always one person on the next row below, overlapping so I could line them up as we went along," he explains. "We had to think about the kids and where they'd be in the picture, and, yes, there are two or three repeated musicians, but who's to say they weren't twins?"

Barbour also faced a tough task in getting even light and lots of depth of field in the cavernous gym. He used four Profoto 7B packs and heads with magnum reflectors, bouncing the light off the high ceiling at full power. The lightstands were placed at the four corners of the frame. The exposure on his Canon EOS-1Ds Mark II was 1/125 sec at f/11 and ISO 320. The lens: a 24–70mm f/2.8L Canon EF zoom at 57mm.

"When this job came in, I took it on myself to do everything—all the production, prep work, location scouting, and prop building. I was exhausted when it was over," he says. "I learned a lesson here: Next time, I'm going to hire stylists, a location scout, and a tech guy for all the Photoshopping." No more allowing himself to become a one-man band! *—Laurence Chen*

Train Bet

Lighten up a locomotive

Peter Crook shot this Cumbres & Toltec K-36 locomotive at Cumbres station in Colorado. Canon EOS 5D Mark II and 17–40mm f/4L Canon EF lens; 11 sec at f/4, ISO 1000.

PETER CROOK

WHEN WE saw Peter Crook's submission for our recent Photo Challenge on low-light photography, we wondered whether we could get some more detail in the shadows.

It turns out we could—pretty easily—using the RAW file Crook provided for us. We made separate conversions of the shadow area and the sky in Adobe Camera Raw, with different exposures. While we were at it, we fixed some keystoning and, with a lens profile, corrected lens distortion. Total time fixing: 15 minutes.

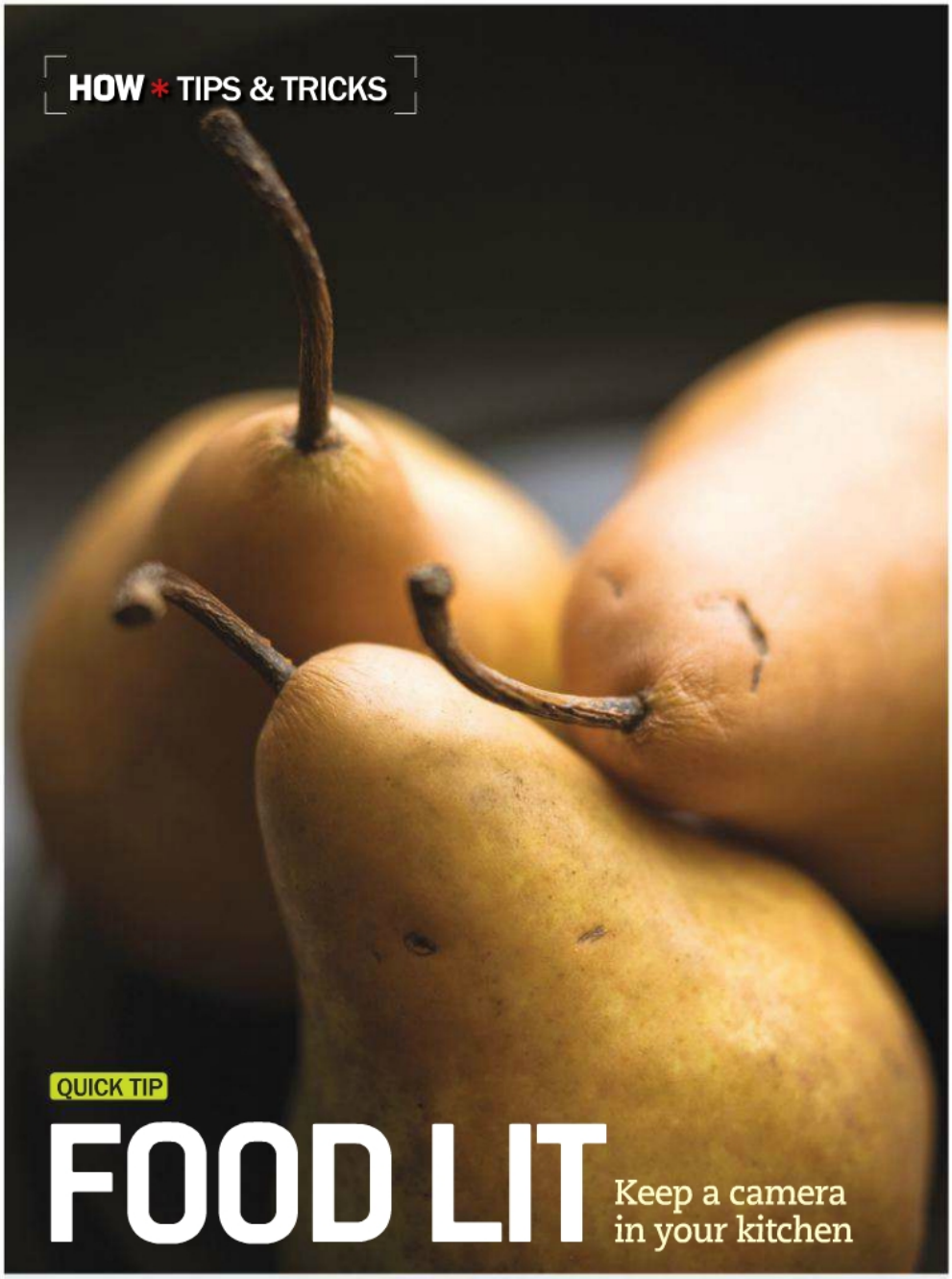
While the photographer had removed the flare spot near the station mast, we left it alone. Given the spot's star shape, we think it looks kind of cool.

Railroad buffs: Watch Crook's professional train videos at traintapes.com. *—Dan Richards and Debbie Grossman*

PHOTO GLOSSARY

APERTURE VS. DIAPHRAGM

AT A RECENT PHOTO workshop, we heard a student ask the instructor, "What aperture opening did you use?" This phrasing reminded us that photographers often use the words "aperture" and "diaphragm" interchangeably. These words, however, have different and distinct meanings. In a camera lens, for example, the diaphragm is the mechanical device made up of thin, overlapping blades that open and close to allow more or less light to reach the camera's sensor. (Those blades are also called an iris.) That circular hole at the center of the diaphragm is the aperture. The preset apertures formed by a diaphragm are called stops, because they regulate the flow of light much as the stops in a pipe organ control the flow of air through *that* instrument.



QUICK TIP

FOOD LIT

Keep a camera in your kitchen

DEREK ISRAELSEN has many specialities, one of which is food (www.derekisraelsen.com). The catalog shooter from Salt Lake City, UT, advises photographers who have a passion for food to keep a camera in the kitchen; great photos will follow.

"I caught these pears out of the corner of my eye while I was shooting something else. A stylist had set them aside in absolutely perfect window light. I turned and got this," he recalls.

Yup, serendipity can strike in the kitchen. Be ready for it by:

- Keeping a camera and high-speed macro lens on hand.
- Having props nearby, such as a slate cutting board or wooden bowl for quickly showcasing your culinary work.
- Choosing the best-lit areas in your kitchen for prepping food.
- Draping a white dish towel over a pot as a reflector.
- And as you prepare a dish, styling it visually and imagining how you will shoot it when you're finished. *—Peter Kolonia*

Israelsen used a Canon EOS-1Ds Mark III and 90mm f/2.8 Canon TS-E tilt-shift lens. He exposed for 1/125 sec at f/3.2, ISO 160, propping up a white card to the side of the pears for fill/rim light.

DEREK ISRAELSEN

What's This?

Novoflex Patron Umbrella

▶ **What it is:** An umbrella system designed to work with lightstands, tripods and assorted accessories ($173, est. street), it performs a number of useful photo functions.

▶ **What it does:** It works as a water-resisting street umbrella, and, attached to a lightstand, it uses foil inserts to function as a reflective studio umbrella.

▶ **Other perks:** An accessory tent (shown) extends over the umbrella to form a shooting blind or portable changing room.

30-SECOND SOFTWARE

RETOUCH IN RAW

The Adobe Camera Raw conversion software that comes with Photoshop might seem like an unlikely place to retouch portraits, but you can make good, quick fixes to people pictures there. The toolbar's redeye removal tool, for example, offers excellent control options. And to its right is the Adjustment Brush. Click that and use a cool trick to smooth skin: zero out all the sliders, but turn down Clarity by moving it to the left. Turn on Auto Mask and start painting on your subject's skin. Lowering Clarity, which affects midtone contrast, tones down wrinkles and can hide age spots. Want to go further? Add a new adjustment point and choose a light pink hue to paint some rosiness onto your subject's cheeks.

—Debbie Grossman

Michael Brands shot the thrilling finale of Aspen's Winterskol fireworks show a few years ago with a Nikon F5 and Fujichrome Provia 100 slide film. Exposure: about 8 sec at f/6.3.

Ski & Shoot

More than just slopes to photograph in Aspen

PHOTOGRAPHER Michael Brands moved to Aspen, CO, nearly 20 years ago to shoot for a local paper; he is still there today, specializing in architecture full-time (aspenphotos.com). "It's a great town for photography, especially in winter," he says. "With World Cup skiers ripping down the mountain at 80 mph, snowmobilers doing back flips at the ESPN Winter X Games, fashion shows, and occasionally, a former president speaking at the Aspen Institute, there's always lots happening here."

First stop: Brands suggests grabbing a local map and taking a quick stroll around town to search out the colorful, mining-era architecture.

Next up, landscapes. Hunter Creek Trail—easily accessible from downtown—provides good nature vignettes, including rushing streams, footbridges, and cool ice formations. Upper reaches of the trail get great light for broader landscapes both early in the morning and at sunset.

Ready to hit the slopes? One of Aspen's four ski areas, the Aspen Highlands offer experienced skiers a mix of rugged terrain and stunning views of the Rocky Mountains on 118 trails. For the extremely skilled in great shape, there are two daring runs: Olympic Bowl, with the looming 13,930 foot Pyramid Peak, and the even more adventurous hike up the 12,392 foot Highland Bowl, for spectacular views of the iconic Maroon Bells peaks.

If you don't ski but want mountain vistas, Brands suggests taking the Silver Queen gondola to the top of Aspen Mountain. "The ride up is breathtaking," he says. "At the top there are panoramic views and you can either bring snowshoes or take tours offered by the Aspen Center for Environmental Studies." Tours are on relatively flat terrain, and the avalanche danger is minimal—a comforting thought! *—Jeff Wignall*

More Winter Wandering

ASPEN-AREA ATTRACTIONS, NO SKIING NECESSARY

- **Ashcroft, CO 10 miles south of Aspen** An 1880s ghost town maintained by the Aspen Historical Society. Guided tours include snowshoes and a gourmet lunch. (aspenhistorysociety.com)
- **ESPN X Games Buttermilk Mountain; Jan. 24–27, 2013.** More than 150 world-class athletes perform daredevil skiing, snowboarding, and snowmobile moves.
- **T-Lazy-7 Ranch Maroon Bells Road** Aspen's oldest working dude ranch offers snowmobile tours to, among other destinations, the Maroon Bells, two of the most photographed peaks in North America. You get great access to the views without skis or snowshoes. In warmer months, try the horseback tours.
- **West End Walking tours Aspen Historical Society, W. Bleeker Street** A great opportunity for photographing—and learning about—Aspen's signature Victorian neighborhood. Phone (970) 925-3721 for an appointment.
- **Winterskol Celebration** More than 60 years old, this annual carnival celebrates everything Nordic. Plus, you'll find snow-carving contests, a Mad Hatter's Ball, skating exhibitions, and fireworks.

MICHAEL BRANDS

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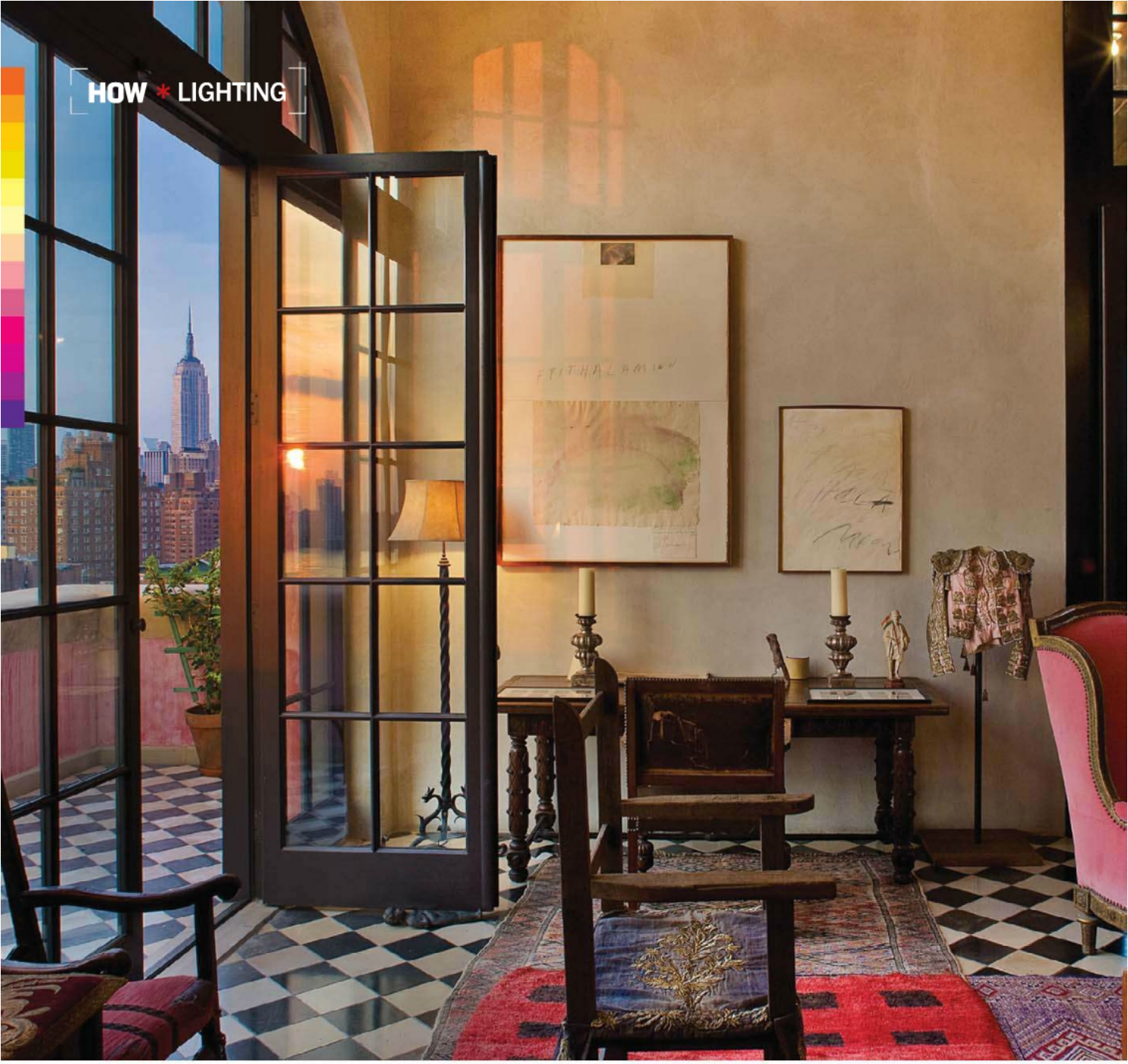


EVAN JOSEPH

Hot Stuff

Mix light to warm up an interior shot

SOME PHOTOGRAPHERS go to extremes to avoid using light sources with opposing color temperatures (mixed light). For interiors, like those that New York-based pro Evan Joseph specializes in, it's common for shooters to switch out floor- and table-lamp bulbs, or even tape large and expensive color-balancing gels over windows in order to wrestle all the light in a given scene to a common color temperature or Kelvin number.

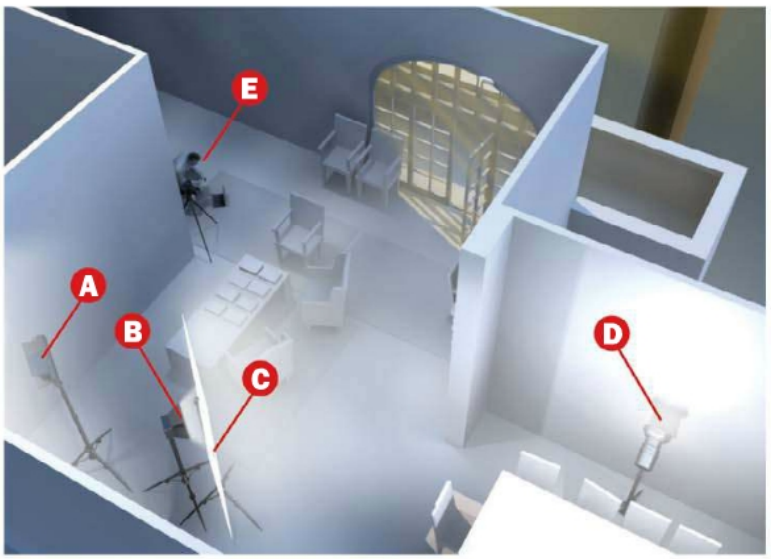
Not Joseph. "I've spent most of my career shooting under mixed light," he says. "I find it energizing."

For this photo of artist Julian Schnabel's palazzo-style Greenwich Village triplex, Joseph artfully played up the mixed light to highlight the sunny feel of the room and its Italianate stylings. To emphasize this warmth, he used tungsten studio hotlights

For more of Evan Joseph's architectural work, see the newly revised book, *New York Then and Now* (Thunder Bay Press; $20)

WORKING WITH MIXED LIGHT

SIMPLE COMPLEX



KRIS HOLLAND/MAFIC STUDIOS (ILLUSTRATION)

New York architectural photographer Evan Joseph had three goals in making this image of a famous Manhattan penthouse. All three required careful attention to lighting. He wanted to showcase the Empire State Building view, capture the rays of the setting sun as they struck the living room wall, and play up the rooms' tawny, Tuscan-esque glow. He started by lighting the living room with a warm-toned Lowel Tota-light (A) which he aimed into the chamber's upper corner to open up shadows. The one light wasn't enough, so he added an equally warm Lowel Omni-light (B), which he placed further into the room, softening its output with a Westcott Scrim Jim diffuser (C). He then lit the distant dining room by bouncing an orange-gelled Dynalite Uni400JRg strobe (D) off one of its walls. Finally, shooting tethered to a laptop (E), he shot tests and studied the results on its screen as an assistant changed strobe and tungsten output until interior and exterior lighting were in perfect harmony.

THE GEAR

Westcott Scrim Jim diffuser ($100, street, 72x72 in.)

Lowel Tota-light ($127, street)

Lowel Omni-light ($159, street)

Using a tripod-mounted Canon EOS-1Ds Mark III and 24mm TS-E Canon tilt-shift lens, Joseph set an exposure of 1/2 sec at f/16, ISO 200.

and a tungsten-gelled strobe, while composing to include as many windows and open doors as possible. The strategy resulted in repeated patches of cool blue sky that worked to set off and emphasize the interior's sunny warmth even more.

Other forms of lighting magic at work here:

- **Balanced light intensities.** To capture this scene with full detail in both interior and exterior views, Joseph set up his interior lights, and then waited until the exterior light levels perfectly matched the interior's. "I had about an 8-minute window to get my shot," he remembers.
- **Finessing the fill.** "My intent was to make the shot seem to be lit only by ambient sources. Ironically, it takes a lot of fill lighting to mimic the look of ambient light." says Joseph. To achieve the desired effect, he set up lights in both the living room in the foreground and the dining room in the distance. He then set each to a relatively high output that overpowered the ambient lighting. Finally, shooting tethered, he studied previews of the lighting on his laptop computer as he incrementally lowered light output until the presence of the artificial fill lighting was practically undetectable. *—Peter Kolonia*

Star Struck

Shoot outer space from the comfort of your living room

ARE YOU hankering for an interesting subject for your next photo adventure? How about something light years away? Swiss photographer Fabian Oefner read Stephen Hawking's popular treatise on recent advances in theoretical physics, *The Universe in a Nutshell*, and felt challenged to find universal truths—as Hawking does so well—in realities that are surprisingly close to home.

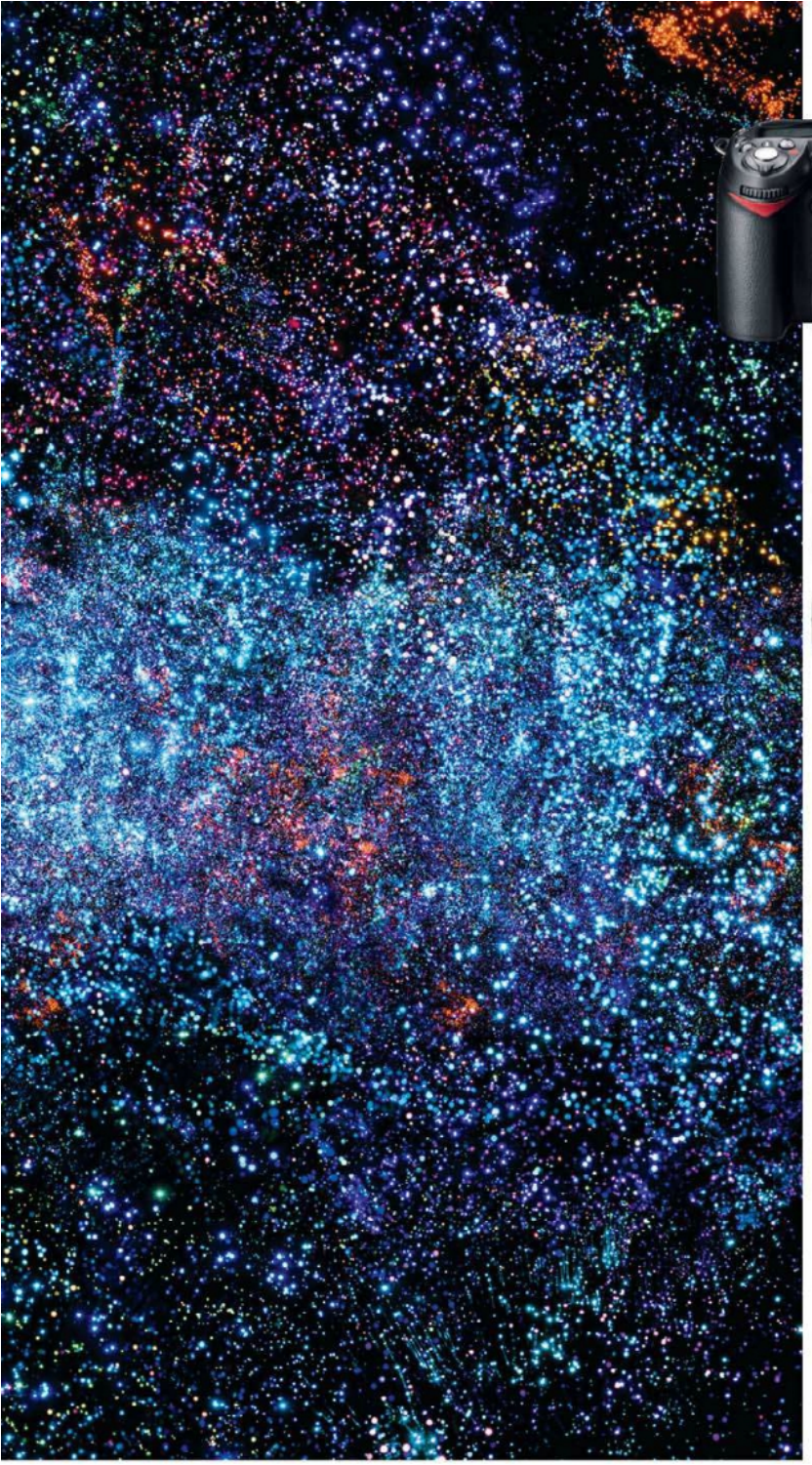
For more of Oefner's scientifically inspired images, visit www.fabianoefner.com.

The result is Oefner's series of images titled "Nebulae," all of which, like the example above, could easily be taken for images made from the outer reaches of our solar system by the Hubble Space Telescope.

But no, this image doesn't depict actual galaxies. Oefner's subjects were the glowing tips of a fiber-optic table lamp, photographed against black with a 1:2 macro lens.

If you'd like to attempt a similar photo, get the right fiber-optic lamp. They're available online and in lighting stores at

FABIAN OEFNER



Oefner shot with a Nikon D90 (A) and a discontinued Nikon 105mm f/4 Micro Nikkor lens—its current equivalent is the 105mm f/2.8G VR Micro Nikkor (B). He suspended the rig above his subject using a Slik Pro 580DX tripod (C), and later composited images using Adobe Photoshop CS6.

Step 1

Gather your gear. Almost any DSLR will do, along with a close-focusing macro lens (preferably 1:1, but 1:2 will do) and a tripod that will let you shoot straight down.

Step 2

Build the set. Choose a location with no ambient light and dark floors. Place your subject (the lamp) on the floor, suspend the camera above it on a tripod, and aim the camera down. When shooting, keep your movement to a minimum in order not to set the fibers in motion.

Step 3

Determine exposure. Do this by testing, then locking in exposure in manual exposure mode. Oefner typically shoots at between 1/2 and 1 sec at f/8 or f/11, ISO 100, in RAW. The correct exposure will produce a completely black background, which is absolutely required here.

Step 4

Make the images. Oefner recommends shooting dozens. Between each, make very slight adjustments to the distance between the camera and subject, the color of the fiber optic strands, and the rotation of the lamp. For a shooting-star-like effect, jiggle the strands while the shutter is open.

Final Step

Combine images in software. Start with approximately 10 images in a single Adobe Photoshop document. Set the blending mode for each to Screen. Then shift the relative positions of the layers and add or remove layers until you have an approximation of outer space. Oefner has layered as many as 50 shots to produce one "universe."

prices starting at about $10. Look for one with black fiber-optic strands—only the tips should glow. The best will let you adjust color and sit on a black base. (If yours doesn't, paint it black.) Consider buying more than one, because strands with differing size, density, and color will give a truer outer-space look.

Yes, as you probably guessed, Oefner's image is a digital composite. His technique is much easier than you might think, however, because it requires no layer masks or laborious erasing of unwanted detail. Just set the right blending mode to each layer and start compositing.

—Peter Kolonia

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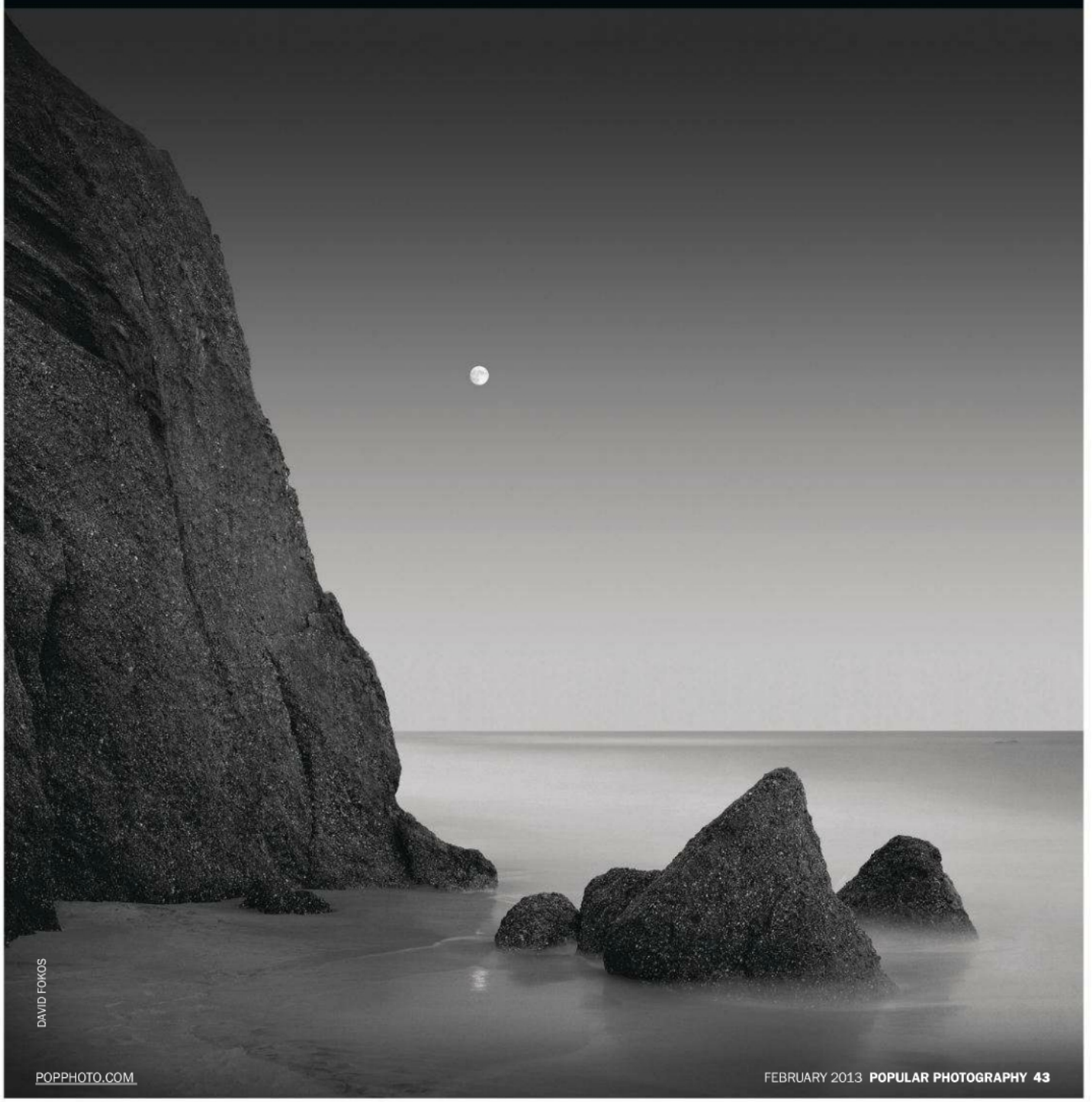
THE NEW Black & White

When we set out to find modern masters of the b&w landscape, we were astonished at the quality and variety of monochrome scenics being made today. Three artists tell us why digital tools have both transformed b&w and kept it thriving.

By Dan Richards



DAVID FOKOS

One started as an audio design engineer, another as a photojournalist, and another as a commercial shooter. All of them were drawn to creating landscapes in black and white, and while all three can be said to work in a "classical" style, each has a distinct character to their images.

Staying with Film

The sole film shooter of our trio of monochromists, David Fokos might be considered a traditionalist's traditionalist, particularly given his camera gear: a vintage Korona 8x10 view camera, plus one—and only one—lens, a 210mm f/5.6 Rodenstock Apo-Sironar-S. (On 8x10, the lens is the equivalent of about 28mm in 35mm full-frame terms.) He uses Kodak Tri-X Pan sheet film.

But after developing the film, Fokos goes digital. If a negative looks promising, he scans it at very high resolution (the grayscale image file is—hold your breath—800MB) and sets to work on it in Adobe Photoshop. He often spends more than 100 hours on an image—and sometimes ends up discarding it anyway.

Why not capture digitally? A major reason is that Fokos prints big—sometimes up to 7½ feet wide. "And 8x10 film gives me the resolution they require," he says. "It's only been within the last couple of years that digital capture has been able to rival this."

Fokos also notes that the reciprocity failure (the tendency of film to be underexposed at long exposure times) of Tri-X helps keep highlights from blowing out during such long exposures—sometimes as long as an hour.

Which brings us to the David Fokos look. "For scenes that contain a lot of motion, my exposures range from 20 seconds to 60 minutes," he says. "This process eliminates what I have termed visual noise—all the short-term temporal events, things that are moving, that can distract us from focusing on the underlying fundamental forms.... In a way, it is like peeling back a page to reveal a world that, while very real, is not experienced visually."

This story's opener, of Shark Tooth Cliff on Martha's Vineyard, MA, was taken at about 90 seconds. At that duration, Fokos realized that the moon would show motion blur. So he took a fast exposure, too, and composited. He also adjusted local contrast and burned in the top and bottom.

The image at right, "Eight Rocks and a Stone," was made on Lucy Vincent Beach on Martha's Vineyard. Captured at less than a second at f/45 or f/64, it is one of Fokos' few images that stops motion. He says he wanted "to make an archetypical image that represents my summer spent walking on that beach."

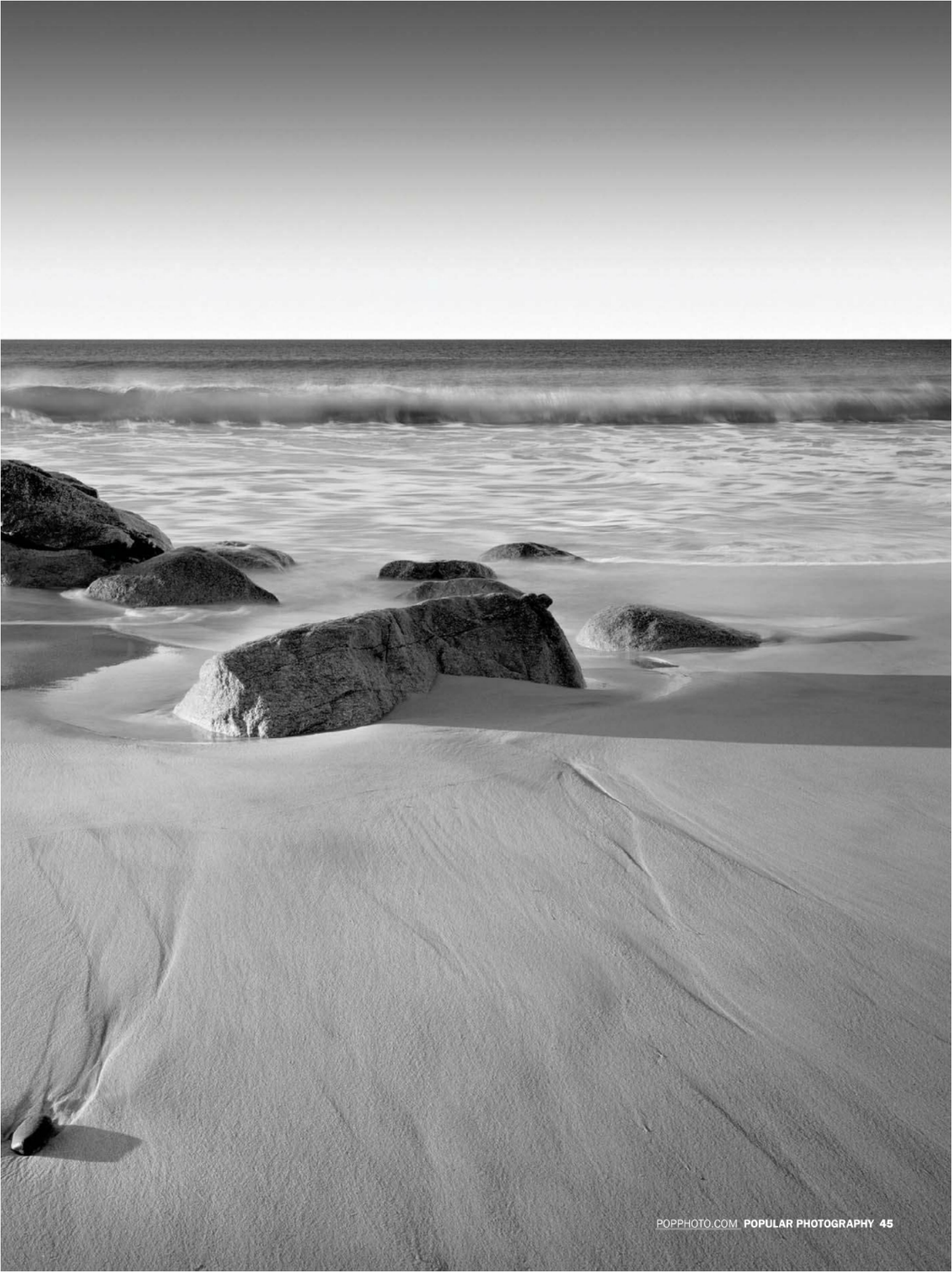
Digital at Step One

While Chuck Kimmerle's compositions evoke the last century's landscape masters (he cites Edward Weston and Fay Godwin) he believes that digital is a different aesthetic from film. "Digital capture has a different look and feel than does film—not better,

DAVID FOKOS

David Fokos

David Fokos' grandfather gave him his first camera, a Kodak Brownie, at age 11. By his teens Fokos was developing and printing, and in his college days took up the view camera. By the late 1990s he was transitioning from his career as an audio design engineer into full-time fine-art photography. He is now based in San Diego, and his work is represented by 15 galleries on three continents; his images are available for commercial use through Corbis. See his work at davidfokos.net.



CHUCK KIMMERLE

not worse—and I feel those differences should be celebrated and used to advantage," he says. "I would never try to make one look like the other. If I really wanted or needed a Tri-X look, I would shoot Tri-X film."

Kimmerle shoots with a Nikon D3x, and his lenses include the Nikon 24mm, 45mm, and 85mm PC-E for their tilt and shift controls. For "Sage Fence, Dead Horse Road, WY," above, he used a 24–70mm f/2.8 AF-S Nikkor to make the exposure at 1/4 sec at f/8, ISO 100. "This image is a good example of right place at the right time," he says. "The sagebrush is located along a fence line I had driven past half a dozen times, never noticing anything special. Then, after a day of looking for photographs, I was heading towards home and, shortly after sundown, literally saw it in a new light. The soft, directional, post-sunset light directly at my back made the branches glow, as if lit from within."

Chuck Kimmerle

From the time he got a Canonet QL17 GIII as a high-school graduation present, Kimmerle knew he was destined to be a photograper. After receiving a degree in photographic engineering technology, he worked as a newspaper photojournalist, university staff photographer, and now as a freelancer based in Casper, WY. Throughout, he has pursued his love of landscape photography, which you can see at chuckkimmerle.com.

As do most serious digital b&w shooters, he captures in RAW and converts later. Here, Kimmerle felt that the image looked too sharp and harsh. So he added a blurred layer in Photoshop, a technique sometimes called the Orton Effect (after Michael Orton, who pioneered the technique using slide sandwiches).

Kimmerle, who usually confines his edits to dodging and burning, notes that this was an unusual level of manipulation. "Working digitally offers far greater control and many more options for interpretation than can be found in a standard darkroom, especially for black-and-white work," he says. "Sadly, many people fall victim to the traps of the power of post-processing. They don't know when or how to hold back, to be subtle. They do too much because they can, relying on digital tricks and gimmicks that mask an image rather than enhance it."

Kimmerle makes landscape images exclusively in black-and-white, he says, for two reasons. "The first is that I am far more interested in an object's form and texture than I am its color," he says. "Those traits are more powerful, more emotional, than an object's tint and hue. The other reason is that I am a firm believer that creative photography is a two-step process: the creation of the image, and the presentation of the print. Or, to quote Ansel Adams, 'The negative is the score, and the print the performance.'"

Two Very Different Hats

To peruse the website of Chris Clor, you might get the idea that he's two different photographers. His commercial work in color for corporate clients tends toward wildly imaginative (some might say over-the-top) composites clearly not meant to represent reality.

His black-and-white landscapes, such as his photograph of the Isle of Skye on the next page, are highly classical, even austere. "Since much of the black-and-white subject matter I shoot is landscape or cityscape, I have adopted a more straightforward approach to the photography, preferring almost no manipulation," he tells us. "Something about black-and-white demands a bit more photographic realism, since at its core it is already an

CHRIS CLOR

abstraction—we see in color."

For the Skye image, Clor used his Canon EOS-1Ds Mark II and 24–70mm f/2.8L Canon EF lens for an exposure of 1/200 sec at f/5.6, ISO 100. After going grayscale, he did "minimal dodging and burning, a bit of noise reduction in the sky, and sharpening." (Learn more in "How to Go Monochrome," page 50.)

Clor is currently using very different gear. "I prefer my Sony NEX-7 paired with a bucketful of old Olympus OM lenses I own from my very first real camera, an Olympus OM-1," he says. "These are lenses that are around 30 years old, and in my book, outperform the modern lenses." (He's not alone; see "Learning to Adapt," page 60.)

Thinking in B&W

Our monochrome masters agree: to hone your b&w skills, just do it. A lot.

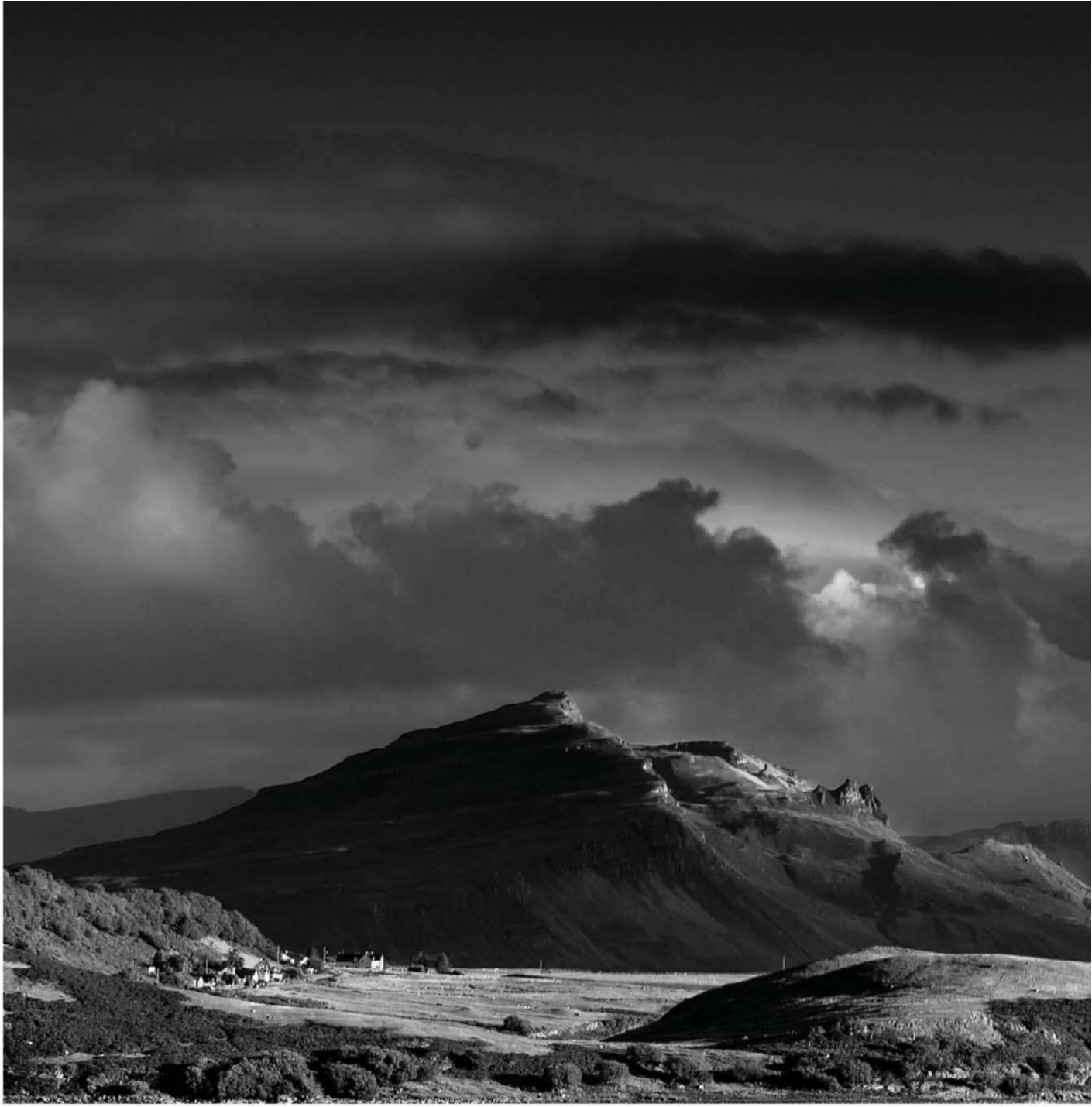
"You need to put the hours and miles in," Clor says. "I would suggest planning a photographic excursion to a place that interests you—not a vacation with the kids where you work in some shooting, but a trip devoted to photography."

"To become better at working in black-and-white, I think it is important to immerse yourself in it completely, training yourself to see the world as it looks in compositions of black, white and gray," Fokos says. He suggests capturing images simultaneously in RAW and monochrome JPEG to view the image on the LCD in b&w.

"The biggest mistake made by those new to black-and-white is to rely too heavily on differences in color rather than differences in luminosity, or brightness," Kimmerle says. "Radically different colors may appear, in a black-and-white image, as the same shade of gray. Seeing in black-and-white is a skill that must be learned by doing."

Chris Clor

Clor caught the photography bug at age 12 when his grandmother gave him an old Kodak Instamatic, and he began darkroom work soon after. While working in a portrait studio, he studied photography at a community college. He freelanced as an advertising shooter in the Detroit area and is now based in London. See more at www.clorimages.com.



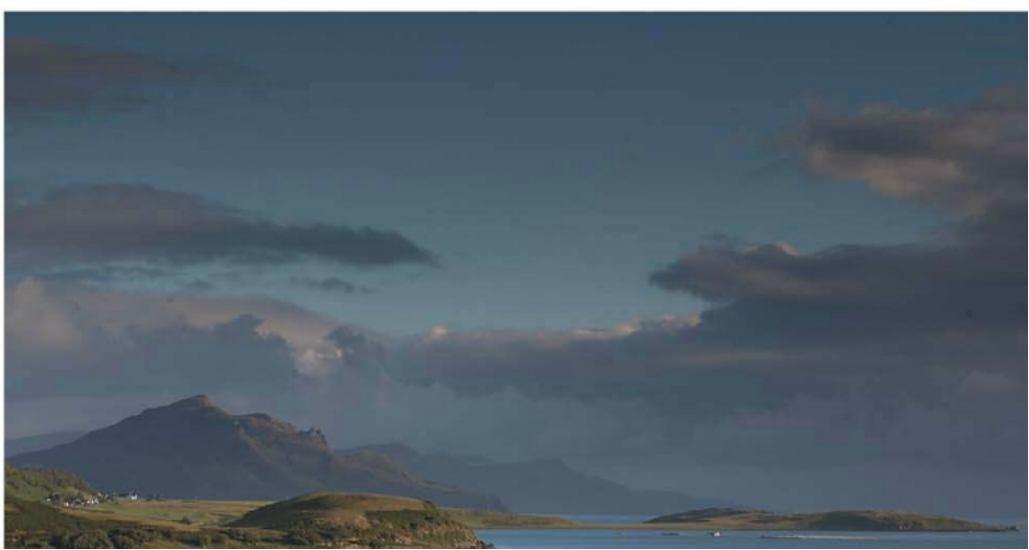
HOW TO GO MONOCHRO

Chris Clor's b&w photographs are stunning, but often begin as humdrum color pictures. Want to convert a color shot? We got Clor to share his secrets so you can try it, too.

CHRIS CLOR (2)

ME

By Debbie Grossman



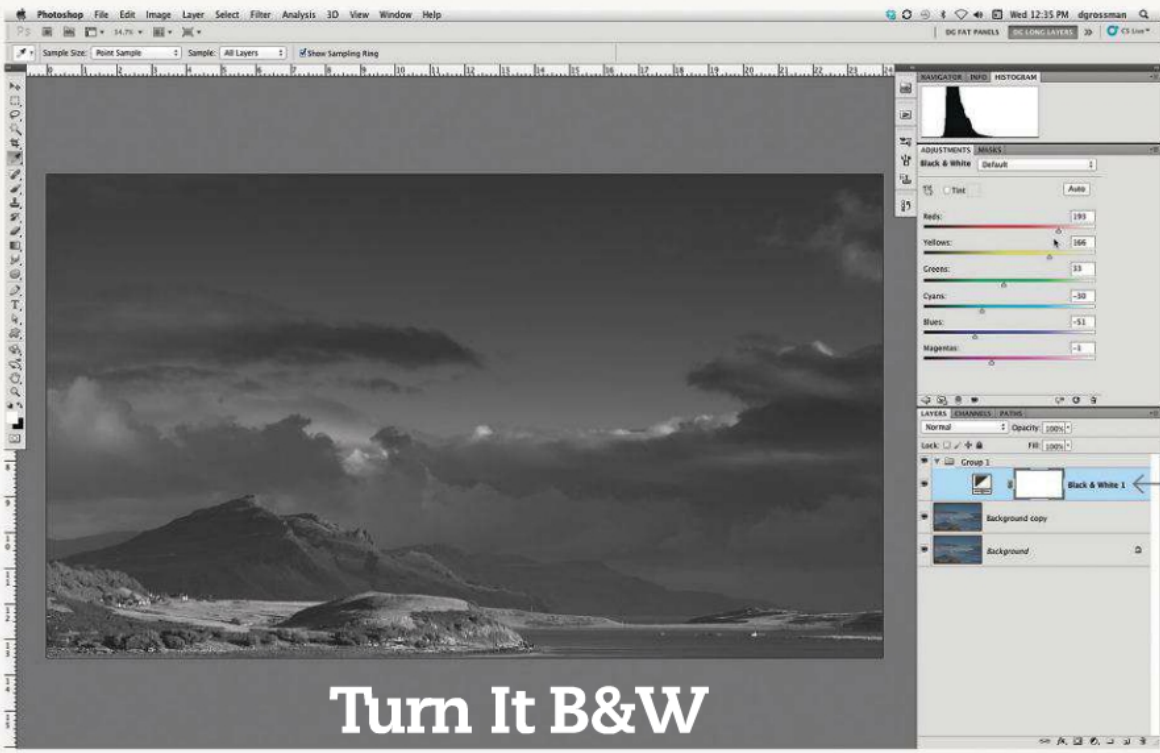
Choose & Convert

1

WHEN PICKING a photo to transform, Clor looks for images that can be easily manipulated, in which the colors differ enough to be shifted independently. For example, he likes foliage with yellows and greens that aren't matched in color elsewhere in the frame. He also prefers a blue sky that can be easily darkened. Then he opens his RAW file using Photoshop CS5's built-in Adobe Camera Raw converter. Clor keeps the image flat, not clipping highlights or shadows. Then it's on to Photoshop.

Turn It B&W

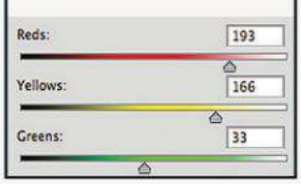
2



Photoshop's built-in Black & White tool works best on an Adjustment Layer.

Adjust The Conversion

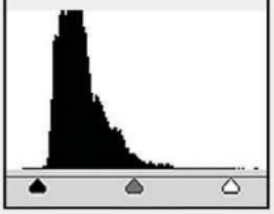
As you gain experience, you'll know which sliders to move, and how much to push them.



DUPING THE background layer is Clor's next step and it should be yours, as well. Start your retouching on the duplicated layer; he'll often get rid of an errant telephone pole or a sensor spot he missed in ACR. For this shot, Clor couldn't help but capture the corner of a roof in the bottom left of the photo (you can see it in Step 1). So he cropped it out.

Then it's time for black-and-white conversion, which Clor does simply with Photoshop's built-in tool on an Adjustment Layer. His trick for using it efficiently? Somewhat counterintuitively, he does not use it to create contrast or drama, which can produce banding later. Instead he nudges the sliders to emphasize the difference in tones. Here, he pushed the yellows, which made up most of the tones of the foliage, and the reds, which brightened the tones of the shore and visible soil.

Levels Adjustment
Drag the sliders inward to add contrast. A little bit of clipping ensures that you'll have true black and white.



Use a Levels Adjustment Layer to add contrast.

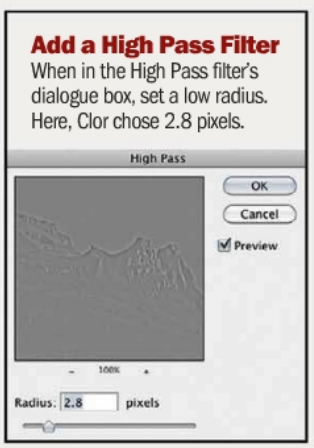
Add Contrast

3

NEXT, HE creates a Levels Adjustment Layer, which he uses to reveal the depth and beauty that was rendered invisible in the image's low-contrast form. Clor isn't afraid of a little shadow clipping, either, though he is careful not to take it too far. Here, he was going for what he calls an "ominous presence"—he wanted the shadow areas of the mountain to go dark. The highlights are clipped slightly, too, but since the clipped areas are so small, he didn't worry about losing detail.

A mask adds sharpness only where it's needed.

Add a High Pass Filter
When in the High Pass filter's dialogue box, set a low radius. Here, Clor chose 2.8 pixels.



Sharpen

4

ONE OF Clor's favorite sharpening techniques, which he applies to areas of detail but not to skies, is the High Pass filter. To make one, duplicate the Background Layer and drag it up above the Levels Adjustment Layer. Then go to Filter > Other > High Pass. Clor sets the Radius fairly low. After clicking OK, change the layer's blend mode to Overlay. Then, to add your sharpening selectively, add a mask, fill it with black, and then paint with white to brush in sharpness where you need it.

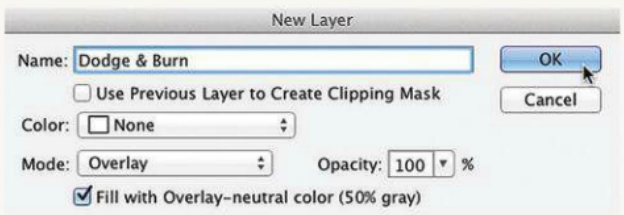
Dodge and Burn

5

CLOR'S DODGE and burn method is another classic Photoshop technique and a killer way to make subtle, nondestructive adjustments to darkness and lightness. Here, he used it to reduce the atmospheric haze on the mountain and to clarify the difference between values; his main focus was on the side of the mountain where the light was falling.

To try his technique, go to Layer > New Layer. In the dialogue box that comes up, change the blend mode to Overlay and check the box for Fill with Overlay-neutral color (50% gray). Name the layer Dodge & Burn, and click OK. From here, dodging and burning works similarly to painting on a mask: Paint with black to darken and white to lighten. Clor keeps his brush set to a very low opacity (around 6 to 10%) so that he can work slowly and build up brightness and darkness where the image needs it.

Tonal Shifts
Set the blend mode while making a new layer (right). Check out Clor's adjustments in this detail of his dodge and burn layer (far right).



6

Lose the Noise

WHEN HIS image is nearly final, Clor creates a composite layer of his adjustments, then opens the file in Topaz's DeNoise 5 plug-in. He likes it because of the filter's debanding component, which assures smooth transitions between tones. Whether the image is ultimately heading for print or not, he prints a proof and, based on it, makes a few final tweaks to his composite layer. Even without the plug-in, Clor's process hints at how simple making a great b&w can be.

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CHRISTIAN KOBER

CARNIVAL PASSION

By Peter Kolonia

We don't usually associate February with explosive color, heat, and unbridled joy. But that's how much of the world sees it. It's Carnival time, with weeks of melting inhibitions, nonstop partying, and great photography.

ACROSS THE globe, February is a time of intense, and eminently photogenic, celebration. To help you shoot the bacchanals (including Mardi Gras) leading up to Lent, we interviewed three pros from the London-based, travel-focused Robert Harding agency.

All three agree that these celebrations—both religious and secular—present unparalleled opportunities for people pictures. If you feel photographically hobbled by the inability to approach and take pictures of strangers, a trip to one of these great festivals will cure you.

"Carnivals are fun because the participants *like* being photographed," explains Yadid Levy, based in Tel Aviv. "Usually, I'm faced with shy, suspicious people who don't want their pictures taken. Carnivals are different. People lose their inhibitions and do things that they

VENICE, ITALY
The Venetian canals make natural backdrops for portraits. "The masked models often hand you a card and ask you to send them copies of the photos you take," says Christian Kober.

YADID LEVY/ROBERT HARDING

RIO DE JANEIRO, BRAZIL
For many, Rio's Sambadrome is the loud and unruly center of the Carnival universe. "It's truly amazing," says Levy.

otherwise wouldn't dare to."

Though he goes mainly for the people, Hamburg-based Kristian Cabanis says, "Carnivals are also fun for the amount of truly intense color you find. Most of Europe's are centuries old, and don't ever change much." The pre-Lenten festivals in Binche (Belgium), Cologne, and Venice at times offer almost eerie instances of medieval local color.

Prepare for Your Trip

Levy starts by studying pictures of the event by other photographers. Flickr and Google are good sources, but he recommends stock agencies, where the photos are by pros. Their pictures can reveal the best lighting, backgrounds, and locations.

He arrives early. "Rio has dress rehearsals the week before. Some let you photograph for free; others charge a small fee. Do an Internet search for Rio samba schools for rehearsal pictures, dates, and times."

Cabanis agrees. "Organizer websites are helpful, with timetables of activities and, when necessary, ticket sales," he says. "I check them in the weeks before, and make a shooting schedule. I decide where I need to be when, how I will travel

ABOVE: ORURO, BOLIVIA One of the oldest festivals in the Western Hemisphere, Oruro's (now) Lenten carnival pre-dates Christianity. The parade shot here by Christian Kober lasts three 18-hour days.

LEFT: MARDI GRAS, NEW ORLEANS The most famous carnival celebration in the U.S., Mardi Gras is almost a full month of masked balls and parades like the one captured here by Sylvain Grandadam. The events are organized by social clubs called Krewes.

CHRISTIAN KOBER/ROBERT HARDING; SYLVAIN GRANDADAM/ROBERT HARDING

from event to event, and where I will stop for food, bathrooms, and to recharge my batteries. I need to know the best vantage points and when the best lighting will happen."

He continues, "I also find out if cameras are allowed, because sometimes they aren't."

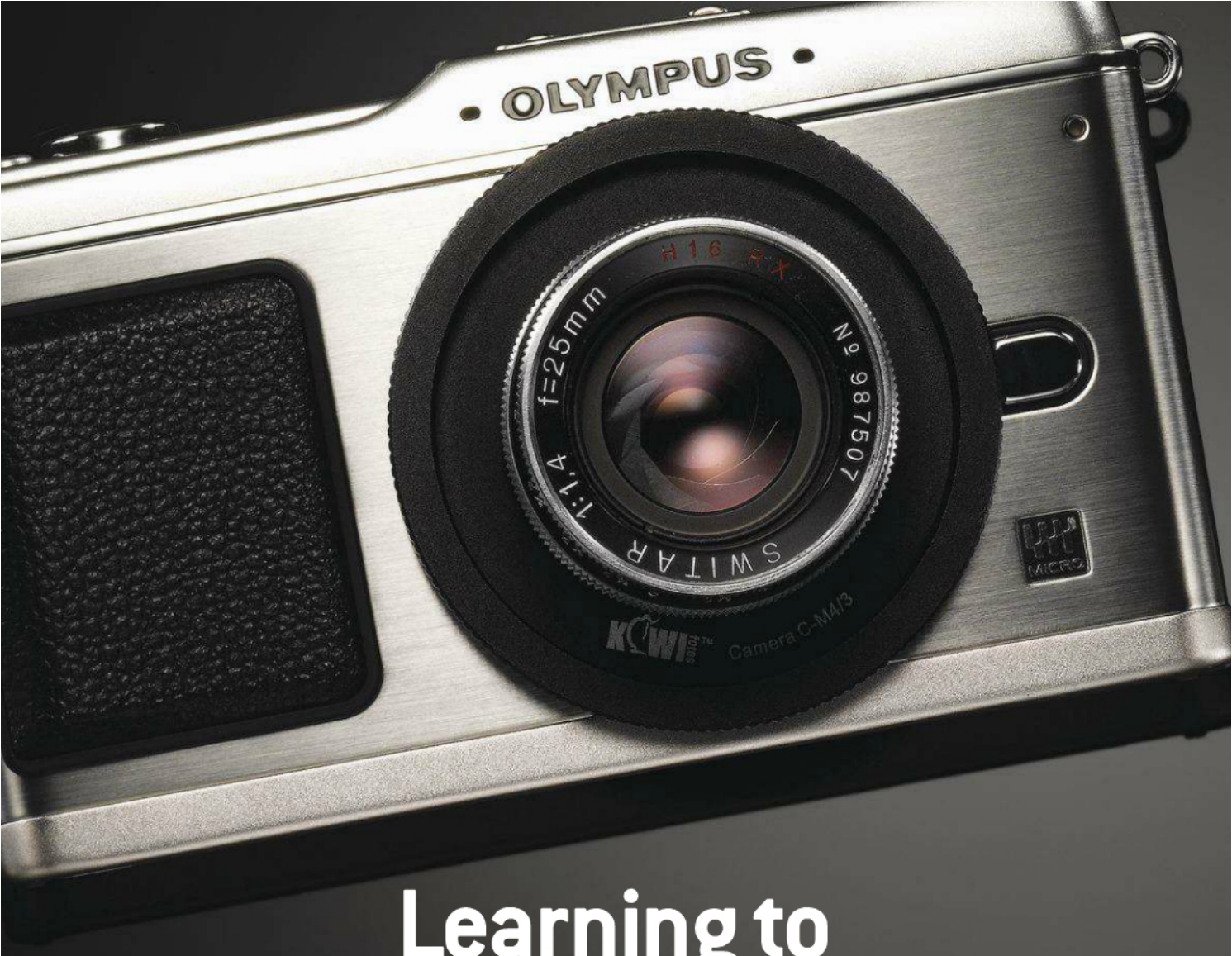
Christian Kober, a Brit who specializes in carnivals and other festivals, relies on what he can discover from locals, including concierges, other photographers, event organizers, and even police. He asks about the best side events, floats, and masked balls. "On the day of the event, I arrive as early as possible. I want the best vantage point even if it means arriving hours before."

Kober also researches public buildings along parade routes in search of unusual vantage points and protection from nasty weather. "I make reservations in the restaurants, when possible, and also try to book hotel rooms with good views of the parade," he says.

The best carnival venues and events are those where you can move freely. Rio's famous Sambadrome is an amazing experience, but most photographers there are locked into one location. "If you can't change position and camera angle, you end up with a thousand near-identical shots," warns Kober.

Cabanis prefers to shoot on wider streets where dancers can spread out, and he positions himself on curves in the road to get the same dancers

CONTINUES ON PAGE 92



Learning to ADAPT

Want to make your camera system even more flexible? Lens adapters can open your world to an array of alternatives—whether the glass you crave is bizarre, classic, or simply no longer made. These magic rings can make many lenses fit on cameras they weren't made for. Here's how to put adpaters to work.

Text by Ian Plant; Photos by Satoshi

IT WAS LOVE at first sight. But as with the greatest love stories, this one seemed cursed by fate. I was a young photographer and she was beautiful: a little bulbous, sure, but incredibly sharp. Not unlike Romeo and Juliet, our problem was pedigree. She was from a rival house, but I vowed to make her mine. With the help of an adapter, I was able to do just that—and now my Canon EOS 5D Mark III is rarely parted from my beloved Nikon 14–24mm AFS f/2.8G ED lens.

Lens adapters allow you to use a variety of wonderful alternative lenses—including some truly exotic optics and some classics that are so exceptional that you may wonder why they aren't still made. Although the lenses made for your camera may be great, having options is nice.

How Adapters Work

Adapters are usually low-tech, nothing more than a machined ring that fits between your lens and your camera. One end is designed to accept a specific lens brand and/or type; the other end is designed to fit the camera. Typically there is no communications bridge to allow the lens to send data to the camera (or vice versa), so electronically driven lens features—notably autofocus and auto aperture—won't work when the lens is mounted on the adapter. You will need to focus manually and physically stop down the aperture before shooting. The lens also won't be able to communicate EXIF data to the camera.

Some adapters include a focus-confirmation chip that allows the camera to signal when a subject is in focus, using an audible beep and/or icon displayed in the viewfinder.

Unfortunately, not every lens is adaptable to every camera system. Most adapters are made for use with older lenses that have manual aperture rings, which must be adjusted by the user. Many modern lenses, such as the Nikon 14–24mm, have electronic aperture control that won't work on other cameras. Adapter manufacturers have worked around this problem by including a physical actuator for the lens aperture built into the adapter. You still have to manually set the aperture, only by adjusting the adapter, and not the lens.

Pros and Cons

Because adapted lenses cancel many of your camera's auto features, they slow you down and therefore may not be suitable for certain applications, such as fast-action sports and wildlife photography. But landscapes, architecture, and other subjects that don't rely heavily on autofocus are well-suited to adapted lenses.

Given the obvious difficulties involved with adapting alternative lenses, and the ready availability of high-quality lenses for current camera systems, you might rightfully ask: Why use alternative lenses with adapters? The chief reasons:

- **COST:** Alternative lenses can be cheaper than their unadapted coun-

TOP TIPS

How to shoot with an adapted lens

- **LEAVE THE APERTURE** wide open to let in the most light when composing and focusing. This will make things easier to see (with unadapted lenses, your camera does this automatically, and stops the lens down to working aperture when you trip the shutter). After composing and focusing, manually stop the lens down to your preferred aperture for depth of field.
- **SHOOT IN** aperture-priority auto (counterintuitive though it may seem). You won't be able to set the aperture using the camera controls when using an adapted lens, but the camera automatically selects a shutter speed based on its meter reading through the stopped-down lens. You can also use exposure compensation as you normally would.
- **REMEMBER THAT** you will also have to stop the lens aperture down manually if you choose to use shutter-priority auto or manual mode to set a specific shutter speed.
- **OPEN THE LENS** aperture back up after taking a shot, for recomposing and refocusing your next shots.

FIVE FAVORITES

Lenses, both classic and current, that elite shooters love

- **ZEISS DISTAGON 21MM F/2.8:** Zeiss lenses for Contax/Yashica are of exceptional quality; this one is tops. (Note that Zeiss now makes it in Canon and Nikon mounts.)
- **OLYMPUS ZUIKO 21MM F/2:** This tiny gem of a lens is a less-expensive, high-performance alternative to the Distagon 21mm. And it's fast, too, at f/2.
- **NIKON 14–24MM AFS F/2.8G ED:** With corner-to-corner sharpness (even wide open), it trounces other lenses in its focal range—even primes.
- **CONTAX N VARIO-SONNAR T* 17–35MM F/2.8:** Many convert this legendary Zeiss lens permanently (see page 62) to a Canon EOS mount.
- **LEICA VARIO-ELMAR-R 21–35MM F/3.5–4:** Made for the discontinued Leica R SLRs, fans say it's one of the sharpest wide-angle zooms available.

ADAPTABLE BUNCH Pentax screw-mount and Minolta lenses can be adapted to some SLRs. Old rangefinder lenses from Zeiss and Nikon can be adapted to many ILCs.

terparts, sometimes significantly so. Many are out of production but nonetheless readily available on the used market for a reasonable price.

- **QUALITY:** Don't believe all the hype that your camera maker's lenses are the best out there. In fact, there are plenty of alternative lenses that may be superior to unadapted optics. In my case, I was less than satisfied with Canon's wide-angle zooms, so I dispensed with brand loyalty and choose an adapted best-in-class solution instead.
- **GAP-FILLING:** Even though the lens lineups for camera systems are fairly extensive, sometimes they have gaps. Alternative lenses often fill these gaps, especially for specialty uses.
- **SYSTEM SWITCH:** If you have changed camera systems, but hate to lose your inventory of lenses from your old system, you might be able to use an adapter and keep using them. This is true when switching between manufacturers (such as from Nikon to Canon) or between systems within the same brand (such as Leica screw-mount to Leica M). You might not want to give up some of your favorite "legacy" lenses; adapters make it possible to keep using them.

Adapter Options

These days, there seems to be no shortage of lens adapters available on the market—some good, some not so good. There are a number of reputable manufacturers making adapters, including Adaptimax, Bower, CameraQuest, Fotodiox, Novoflex, Vello, Voigtländer, and others. You can find cheap adapters on places such as eBay, many of which are quite good—but you can also find many adapters that will be inadequate for critical use.

Do your homework before buying an adapter to make sure you are getting the quality and features you need. Consult the websites of adapter makers to ensure you're getting the functionality you expect. Most important, make sure your adapter will allow you to focus throughout the entire native focus range of the lens, especially infinity focus (good adapters won't affect focus at all).

Adaptable Camera Systems

Although most camera systems are adaptable up to a point, not all systems are created equal when it comes to adapting alternative lenses for use. Nikon cameras are among the least adaptable. Canon DSLRs are arguably the most adaptable because of a generously sized lensmount, and over the years many people have successfully adapted their Canon DSLRs to a broad range of alternative lenses. Among the ones I've used on my Canon bodies are several Zeiss lenses from the old Contax line of film cameras. Most

CONTINUES ON PAGE 94

PERMANENT ADAPTATION

IF YOU DON'T LIKE losing autofocus and auto aperture, consider having your alternative lens permanently modified by a professional service. Conurus in Vancouver, BC, Canada (conurus.com) is a leader in modifying alternative lenses for certain cameras. Modified lenses retain autofocus, auto aperture, and EXIF communication. Current options include Contax N lenses to Canon EOS cameras, Canon EF lenses to Sony NEX cameras, and Contax N lenses to Sigma SD14 cameras. Expect to pay anywhere between $300 and $1,000 for modification, depending on the lens.

LAB

AUTHORITATIVE TESTS, REVIEWS, AND BUYING ADVICE

FUJIFILM X-E1 ILC AND SIGMA 35MM F/1.4 DG HSM AF "ART" LENS

66

70

NEW FAST PRIME: PENTAX-DA 50MM F/1.8

81

CAMERA TEST

FULL MONO

Leica's rangefinder for purists shoots in beautiful black-and-white—and only black-and-white

SATOSHI

AS THIS ISSUE was being prepared for publication, the Guggenheim Museum in New York was showing an excellent special exhibit called "Picasso Black and White." Last year, the silent black-and-white film *The Artist* won the Oscar for Best Picture. And now Leica has given the world a serious digital camera designed to shoot black-and-white exclusively, the 18-megapixel M Monochrom ($7,950, street, body only).

Besides its unique sensor, the Monochrom has other proper-

LEICA M MONOCHROM

18MP full-frame CCD sensor
Captures monochrome images only
ISO 160-10,000
Comes with Nik Silver Efex and Adobe Lightroom
$7,950, street, body only.

ties that set it apart: Like its siblings in Leica's M series, it sports a bright optical rangefinder and focus is manual-only—no autofocus here. Forget about such newfangled features as video and a live-view LCD (you'll have to wait for the new Leica M for those). And its tough, all-metal body can stand up to all the abuse the most aggressive street photographer might subject it to.

But we already knew all that. Now, after our battery of evaluations under controlled conditions in the Popular Photography Test Lab, we can at last report on how well the M Monochrom captures its many-shades-of-gray images.

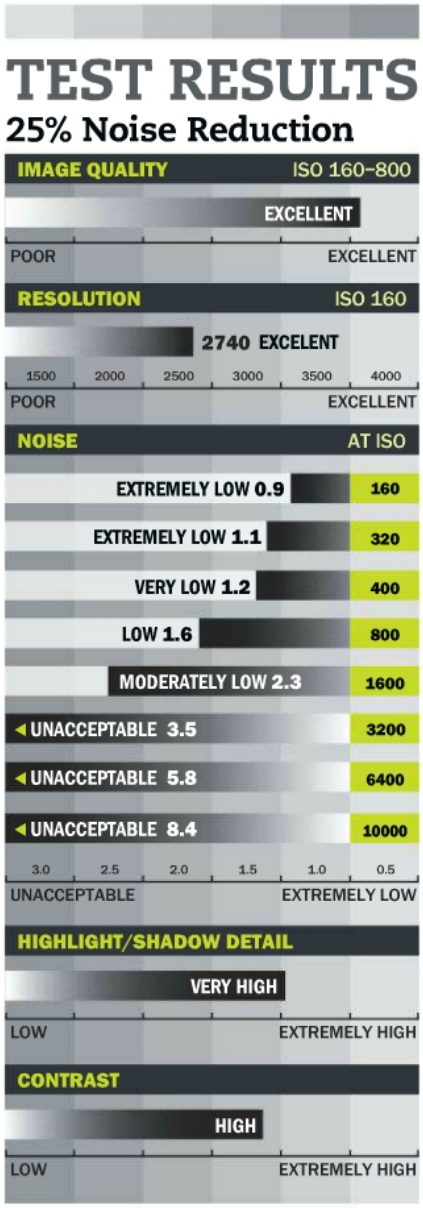
In the Test Lab

One of the main points of limiting the Monochrom to black-and-white capture was to do away with the Bayer color filter array that sits atop the sensors in Leica's previous digital bodies, as well as in its new M and ME rangefinders. The hope: By eliminating the Bayer array from the optical path and allowing every effective pixel on the Monochrom's sensor to be represented without the interpolation that goes along with the Bayer color process, the camera would create images with greater resolving power.

And, indeed, the Monochrom did outresolve the Leica M9 in our resolution test, though not by a whole lot. When we tested the M9 for our December 2009 issue, it turned in 2675 lines per picture height at its lowest sensitivity of ISO 80 in our resolution test. The

LEICA M MONOCHROM
WHAT'S HOT
Excellent image quality; Leica design.
WHAT'S NOT
No autofocus; slow 2 fps burst rate.
WHO IT'S FOR
Serious black-and-white shooters who prefer sharpness over color capture.

PHILIP RYAN (LCD IMAGE)



Monochrom, at its lowest setting of ISO 160, resolved 2800 lines in our test when no noise reduction was applied.

When we applied 100% noise reduction in Adobe's Photoshop Lightroom 4 (which comes with the Monochrom, along with Nik Silver Efex Pro 2), clearly overkill on an ISO 160 image, resolution dropped to 2650. That's pretty good for an 18MP sensor, but it doesn't represent an earth-shattering amount of added sharpness over its elder sibling. (The new ME is essentially a rebadged M9, so our comparisons here can likely be used to compare the Monochrom to the ME, as well.)

As it did with the M9, the inclusion of Lightroom—and Leica's use of Adobe's DNG format in lieu of a proprietary RAW format—turned our usual noise test on its head. We typically use the manufacturer's default noise reduction setting when converting RAW images for testing. In this case, we ended up running the noise test five times over—at 0%, 25%, 50%, 75%, and 100% noise reduction. In this report, we include charts for the results from 0%, 25%, and 75% because these seem to provide the most useful information.

When we converted our test images from RAW to TIFF we used varying levels of noise reduction; the three charts above highlight the resolution and noise results at 0%, 25%, and 75% reduction (left to right).

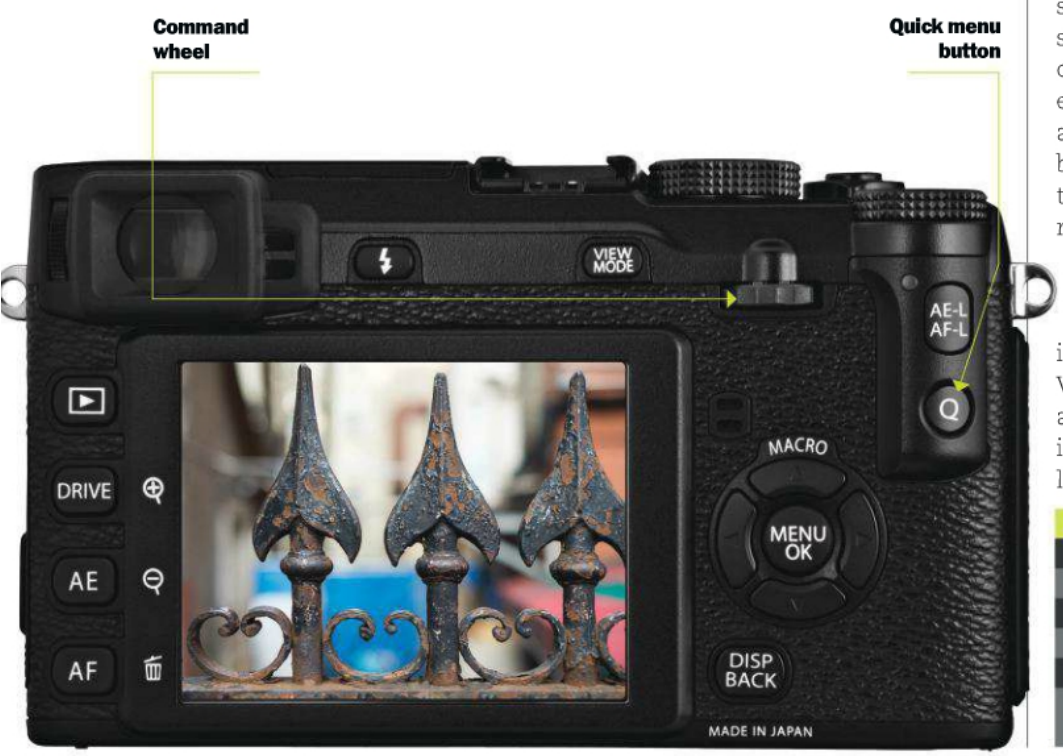
One of the Monochrom's advantages in eliminating color from the sensor is that you have to worry only about luminance noise, which can be reduced quite effectively in Lightroom 4. As a result, the resolution lost to noise reduction never exceeded 100 lines in our lab tests when we restricted the noise-reduction setting to 75% or lower. We found that we were able to keep noise to Acceptable levels (per our rating scale) for all ISOs with it set to 75%. Obviously, your subject matter and desired look

CONTINUES ON PAGE 86

AMATEUR PRO

X Appeal

ANOTHER COOL CAM IN FUJIFILM'S PREMIUM ILC LINE



FUJIFILM'S elegantly retro X-Pro1 wowed us with great images, a cool hybrid viewfinder, and a comfortable set of controls when we tested it for our June 2012 issue. But its slightly sluggish autofocus and irksome manual focusing tempered our excitement. Plus, its $1,700 price tag (body only) put it out of reach for many photographers. Fujifilm's new X-E1 uses the same APS-C-sized 16.3MP X-Trans CMOS sensor as the X-Pro1, ditches the hybrid finder in favor of a 2.36-million-dot OLED electronic viewfinder, and adds a built-in flash in a physically smaller body—with a nearly identical control layout. While at $1,000, street, body only ($1,400 with 18–55mm f/2.8–4 OIS kit lens), it's still a pricey camera, but the X-E1 costs hundreds of dollars less than the X-Pro1. Is it worth your dollars? Let's see....

In the Test Lab

Since the X-E1 has the same sensor as the X-Pro1, we weren't surprised to see test results very close to those of the earlier camera. Overall, the X-E1 achieved a better rating for image quality, but only because Fujifilm has gotten better at reproducing accurate color with the unique color filter array on its X-Trans sensor. The X-Pro1, with an Extremely High color accuracy rating, had its image quality rating drop to Very High as a result; the X-E1's average Delta E of 7.9 just makes it past our threshold for an Excellent color accuracy rating and

FUJIFILM X-E1
WHAT'S HOT
Nearly matches X-Pro1 for less money.
WHAT'S NOT
Metering in bursts locks at first frame.
WHO IT'S FOR
Price-minded shooters seeking a swappable-lens rangefinder-style body.

PHILIP RYAN (LCD IMAGE)

tipped the overall image quality to Extremely High.

In our resolution test, the X-E1 closely matched its sibling. Once again, diagonal resolving power outstripped horizontal and vertical measures, with all three averaging 2370 lines at ISO 200. As we turned up the sensitivity, the X-E1 held on to most of its resolving power, turning in 2300 lines at ISO 1600 and 2200 lines at ISO 6400. Below ISO 200 and above ISO 6400, the X-E1 will not let you capture RAW images, so you're stuck with JPEGs. Given that, the X-E1 resolved 2320 lines at ISO 100, 2170 lines at ISO 12,800, and 2090 lines at its maximum of ISO 25,600. Not a bad showing.

When it comes to noise, the X-E1 is a tad noisier than the X-Pro1 from ISO 400 and up. At ISO 200, the new camera proved ever-so-slightly cleaner. At ISO 100, however, the X-E1 proved considerably cleaner, earning our highest rating of Extremely Low. It doesn't take long for noise to rise, though to its credit, the X-E1 keeps noise to acceptable levels up to ISO 1600.

In the Field

From the outside, the X-Pro1 and X-E1 look nearly the same, aside from the X-E1's lack of the window for an optical finder. The similarity is exceptionally keen if you opt for the black version of the X-E1 instead of the two-toned silver-and-black body we had for our test.

On the back, Fujifilm moved the playback button to the left of the LCD. The finder also gets a built-in diopter rather than the replaceable finder optics on the X-Pro1. The X-E1's shutter-speed dial differs slightly in that it doesn't lock like the one on the X-Pro1. But with its adequate yet not overly stiff detents, and its position recessed from the rear edge of the camera body, we never accidentally turned the dial once in our field testing.

We did occasionally find that the exposure compensation dial would turn when we carried the camera in a camera bag. This easy-turning dial provides a remarkably quick way to bracket manually or to adjust for abnormal lighting conditions. We suggest that you double-

The new lens that ships with X-E1 kits delivers the familiar 18-55mm range that most kit lenses cover, but has a fast f/2.8–4 maximum aperture range.

If you're looking for a really nice rangefinder-style ILC, you should give the X-E1 a try.

TEST RESULTS

IMAGE QUALITY ISO 100–200

EXTREMELY HIGH

POOR — EXCELLENT

RESOLUTION ISO 200

2370 EXTREMELY HIGH

1500 2000 2500 3000 3500 4000

POOR — EXCELLENT

COLOR ACCURACY

EXCELLENT 7.9

HIGH — EXCELLENT

NOISE AT ISO

EXTREMELY LOW 1.0	100*
LOW 1.7	200
MODERATELY LOW 2.3	400
MODERATE 2.8	800
MODERATE 2.6	1600
◀ UNACCEPTABLE 3.4	3200
◀ UNACCEPTABLE 3.7	6400
◀ UNACCEPTABLE 4.3	12800*
◀ UNACCEPTABLE 5.4	25600*

3.0 2.5 2.0 1.5 1.0 0.5

UNACCEPTABLE — EXTREMELY LOW

HIGHLIGHT/SHADOW DETAIL

VERY HIGH

LOW — EXTREMELY HIGH

CONTRAST

HIGH

LOW — EXTREMELY HIGH

* Based on JPEG

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check it when you take the camera out of a bag.

As with the whole X-Series, aperture is changed by a ring on the lens, complete with click stops. Focus mode gets a three-way flip switch on the left front of the body. Most other settings can be changed in the quick menu. Meanwhile, any of 13 different settings can be assigned to the function button that sits next to the shutter release. In our field tests, we left this set to ISO.

In our test of the X-Pro1, we noted that manual focusing was less than optimal due to the sluggish rate of adjustment when you turn the focusing ring. Fujifilm has not only made the focusing ring more responsive, but made the action progressive—the faster you turn the ring, the faster the focus changes. So now you can get from one end of the focusing scale to the other with one quick turn. With a little practice, we found the manual focusing quite pleasing. The X-E1's autofocus is also faster than the X-Pro1's, but it remains middle-of-the-road for ILCs. Not a problem—just not amazing.

The most useful addition over the X-Pro1 is the X-E1's pop-up flash. With a guide number of 22 (feet, ISO 200), it's not super-powerful, but not as overly weak as the ones in many compacts. We were initially confused when we tried to adjust flash-exposure compensation with the camera in its silent mode. Turns out that, because silent mode is meant for those times when you don't want to be noticed, it disables the flash.

Bottom Line

The Fujifilm X-E1 is a great addition to the company's line of premium ILCs. Rangefinder diehards might miss the optical finder provided in the X-Pro1, but given that this isn't a true rangefinder, we were perfectly okay with the X-E1's EVF. It's wonderfully crisp, bright, and gives you a good preview of the effects of setting changes. Its refresh rate could be quicker—you'll notice a bit of stuttering on fast pans—and we wish it didn't black out during bursts, but it's among the best electronic finders out there. We'd say Sony's OLED finders are the only ones that are appreciably better.

If pricing has made you hesitant to enter Fujifilm's X-Series, the X-E1 might be just the thing to draw you in. And if you're just looking for a really nice rangefinder-style ILC, you should give the X-E1 a try. We think you'll like it. —*Philip Ryan*

SPECIFICATIONS

IMAGING: 16.3MP effective, APS-C sized X-Trans CMOS sensor captures images at 4896x3264 pixels with 12 bits/color in RAW mode.

STORAGE: SD, SDHC, SDXC stores JPEG, RAF RAW, and RAW + JPEG files.

BURST RATE: Full-sized JPEGs (Fine mode), up to 40 shots at 6 fps; RAW, up to 10 shots at 6 fps.

AF SYSTEM: TTL contrast detection with 49 selectable focus areas; single-shot and continuous AF.

SHUTTER SPEEDS: 1/4000 to 30 sec, plus B (1/3-EV increments).

METERING: 256-segment TTL metering, evaluative, centerweighted average, and spot (approx. 2% of viewfinder).

ISO RANGE: Normal, ISO 200–6400 (in 1/3-EV increments); expanded (JPEG only), ISO 100–25,600.

VIDEO: Records at 1920x1080p at 24 fps; 1280x720p at 24 fps in H.264 MOV format; built-in stereo microphone; stereo minijack input; maximum clip length 29 min.

FLASH: Built-in pop-up, GN 22 (ISO 200, feet); flash sync to 1/180 sec.

VIEWFINDER: Fixed eye-level 0.5-inch 2.36-million dot OLED.

LCD: 2.8-inch TFT with 460,000-dot resolution.

OUTPUT: Hi-speed USB 2.0, mini HDMI video.

BATTERY: Rechargeable NP-W126 Li-ion, CIPA rating 350 shots.

SIZE/WEIGHT: 5.0x2.9x1.5 in., 0.8 lb with a card and battery.

STREET PRICE: $1,000, body only; $1,400 with 18–55mm f/2.8–4.0 OIS lens.

INFO: www.fujifilm.com

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AMATEUR PRO

Work of Art

THE FIRST IN SIGMA'S SPECIALTY LINE

SIGMA'S DETERMINED climb from an independent supplier of low-cost lenses to an optics luxury brand enters a new phase with the company's "Global Vision" initiative. More than just a marketing campaign, the program introduces quality-control innovations such as confining all manufacturing to highly automated facilities located exclusively in Japan and the Modulation Transfer Function (MTF) testing of every lens produced.

Global Vision lenses will be divided into three lines: Art, Contemporary, and Sport. The latter will be mostly long, fast teles; the Contemporary line promises big performance in compact packages; and the Art lenses—like this new full-frame 35mm f/1.4 DG HSM AF ($900, street)—are designed to produce creative and/or dramatic effects.

This first member of the Art family also boasts one low- and four super-low-dispersion glass elements; Sigma's near-silent HSM focusing motor; and its exclusive Thermally Stable Composite (TSC) metal that limits the expansion and contraction of lens parts as ambient temperatures fluctuate.

CONTINUES ON PAGE 84

SIGMA 35MM F/1.4 DG HSM AF
WHAT'S HOT
Well-controlled distortion, rugged build.
WHAT'S NOT
Slightly less sharp than competition.
WHO IT'S FOR
Wide-angle fans who want f/1.4 speed and *bokeh*.

SPECIFICATIONS

35MM (33.97mm tested), f/1.4 (f/1.47 tested), 13 elements in 11 groups. Focus ring turns 100 degrees.
DIAGONAL VIEW ANGLE: 63 degrees.
WEIGHT: 1.54 lbs.
FILTER SIZE: 67mm.
MOUNTS: Canon AF, Nikon AF, Pentax AF, Sigma AF, Sony AF.
INCLUDED: Lenshood, case.
STREET PRICE: $900.
FOR INFO: sigmaphoto.com

TEST RESULTS

DISTORTION: 0.12% (Slight) barrel.
LIGHT FALLOFF: Gone by f/2.5.
CLOSE-FOCUSING DISTANCE: 11.75 inches.
MAX. MAGNIFICATION RATIO: 1:4.56.

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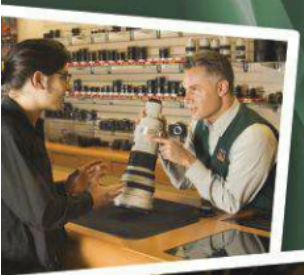

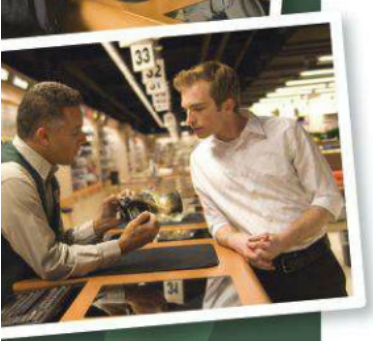

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- Full HD 1080p Video with Stereo Sound

#NICPP7700B

12 Mega Pixels

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- Xtra Fine 3" LCD with WhiteMagic
- 3.6x Optical Zoom • 7.2x Digital Zoom
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20 Mega Pixels

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8GB	19.50	—	—	14.95	18.50	—	—	—	37.50	—	27.95	34.50	—	—
16GB	29.95	59.95	69.95	—	—	23.50	49.95	69.95	53.95	114.50	48.50	57.95	75.00	—
32GB	58.95	99.95	119.95	—	—	49.95	79.95	123.95	99.95	209.95	—	94.95	139.99	—
64GB	112.95	239.95	269.95	—	—	—	—	212.50	179.95	414.95	—	179.00	328.88	—
128GB	—	459.95	499.95	—	—	—	—	—	339.00	712.95	—	—	—	699.95
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	Sony	
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SDXC-UHS-1 Extended Capacity

	Delkin		Lexar			Sandisk		
	600x	633x	200x	Class 10 400x	600x	30 MBs	Class 10 45 MBs	90 MBs
64GB	114.95	139.95	59.95	91.95	149.95	64.95	87.95	130.96
128GB	219.99	—	—	179.95	259.95	—	184.95	—
256GB	—	—	—	399.95	**Note:** Not all devices support SDXC cards			

SDHC-UHS-1 Ultra High Speed

	Delkin		Lexar			Sandisk		Panasonic		Sony
	600x	633x	Class 10 200x	400x	600x	Ultra 30 MBs	Extreme Pro 90 MBs	Gold 25 MBs	Pro Class 10	Pro Class 10
8GB	17.95	28.95	—	14.95	—	11.95	21.00	27.50	54.95	19.95
16GB	29.95	45.95	18.95	24.95	39.95	14.95	39.50	29.95	99.95	31.95
32GB	49.95	91.95	34.95	39.95	68.95	36.50	64.50	67.95	178.50	59.50

SD HC Secure Digital High Capacity

	Delkin		Kingston			Lexar		Sandisk				Sony	
	Pro Class 6	Pro Class 10	Standard Class 4	Ultimate X Class 10 100x	Micro Class 4 Multi Kit	Std Class 4	Platinum II 100x	Std Class 4	Ultra Class 6	Extreme Class 10	Micro Class 4	Standard Class 10	Micro Class 4
4GB	—	7.95	—	—	6.29	6.45	—	6.50	7.95	12.06	6.99	—	6.99
8GB	8.99	8.95	6.95	10.95	9.50	8.68	9.95	7.95	—	14.95	—	9.95	9.18
16GB	—	14.95	12.95	18.95	13.95	14.95	16.15	12.95	—	24.95	13.95	17.50	14.95
32GB	—	24.95	22.50	34.95	24.95	24.95	26.99	22.00	—	42.95	24.95	28.95	—

XQD High-Speed for Nikon D4

	Sony	
	H Series 125 MBs	S Series 168 MBs
16GB	129.99	—
32GB	229.99	258.95
64GB	—	458.95

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Travel Tripods

Sturdy yet superbly lightweight tripods with legs that fold upward 180° to create an extremely compact package for transport – with the included head attached. For further versatility for travelers, one of the legs unscrews from the chassis and attaches to the head & carbon-fiber center column to form a working-height monopod. These full-sized tripods with head ensure a stable base for any DSLR body/lens combination with multiple accessories, or for a compact HD video camera.

- One Leg, Column & Head Form Monopod • Removable Head
- Forged Aluminum Chassis • Pan & Tilt Control • Retractable Spikes in Feet

Model	Included Head	Load Capacity	Max. Height	Folded	Weight	SKU #	Price
Anodized Aluminum Series with Head							
AT-3400	BA-00T	6.6 lb	56.7"	15"	3 lb	#OBAT3400BA00	$149.95
AT-3410	BA-00T	6.6 lb	59.4"	16.5"	3.4 lb	#OBAT3410BA00	$224.95
AT-3420	BA-0T	11 lb	62.6"	17.7"	4.2 lb	#OBAT3420BA0T	$259.95
6x Carbon Fiber Series with Head							
CT-3400	BB-0T	12.4 lb	56.7"	15"	3 lb	#OBCT3400BB0T	$349.95
CT-3410	BB-0T	16.8 lb	59.4"	16.5"	3 lb	#OBCT3410BB0T	$399.95
CT-3420	BB-1T	22 lb	62.8"	17.7"	4 lb	#OBCT3420BB1T	$449.95
CT-3500	BB-0T	12.4 lb	53.3"	12.8"	2.5 lb	#OBCT3500BB0T	$349.95
CT-3510	BB-0T	16.8 lb	60.6"	15.5"	3.2 lb	#OBCT3510BB0T	$399.95
CT-3520	BB-1T	22 lb	64.8"	16.5"	4 lb	#OBCT3520BB1T	$469.95

OLYMPUS E-PL5 Mirrorless System Camera

- 3.0" Flip Portrait LCD Touchscreen
- TruePic VI Image Processor
- 4/3 Full Frame Zuiko Lenses
- SD/SDHC/SDXC Card Slot
- In-Body Image Stabilization
- Full 1080i HD Video
- F.A.S.T. Auto Focus
- ISO 25600
- 12 In-camera Art Filters
- Available in Black, Silver or White

*Kit with 14-42mm II Lens.....#OLEPL51442**

16 Mega Pixels

Panasonic Lumix DMC-G5 Mirrorless System Camera

- Full HD 1080 60p Video
- Redesigned Venus Engine Image Processor • 3.0" Touch Screen Tiltable-Rotatable LCD
- Micro 4/3 Lens Mount
- SD/SDHC/SDXC Card Slot
- Live View Finder with Eye Sensor
- Electronic Silent Shutter Mode
- 14 Adjustable In-camera Filters
- Contrast AF, Touch AF and Light Speed AF

Kit with 14-42mm G Vario Lens.....#PADMCG5KB

16 Mega Pixels

SONY Alpha NEX-5R Mirrorless System Camera

- Fast Hybrid Autofocus
- 3.0" Tilt-able Touchscreen LCD
- Uses Sony E-mount Lenses
- Intuitive Interface with Control Dial
- Full 1080 HD 60p/60i/24p Video
- SD/SDHC/SDXC & MS Pro Duo/ HG-Duo Card Slot • Wi-Fi Sharing
- PlayMemories Camera and Mobile Apps
- Low Light Performance up to ISO 25600
- Available in Black or Silver

*with 16-50mm Lens.....#SONEX5RL**
*with 18-55mm Lens.....#SONEX5RK**

16 Mega Pixels

SONY Alpha NEX-6 Mirrorless System Camera

- Fast Hybrid AF with Phase-Detection AF
- 3.0" LCD
- Uses Sony E-mount Lenses
- XGA OLED Tru-Finder EVF
- Captures 1080 HD Video
- SD/SDHC/SDXC & MS Pro Duo/ Pro HG-Duo Card Slot
- Wi-Fi Capable
- Fast 10fps Burst Shooting
- PlayMemories Camera Apps

*with 16-50mm Lens.....#SONEX6L**

16 Mega Pixels

SONY Alpha SLT-A57 DSLR

- 3.0" 921,600-dot Tiltable LCD
- Full HD 1080p with AVCHD 2.0
- Sony A-mount Lens Mount (1.5x factor)
- MS/MS Pro & SD Media Slot
- Auto Portrait Framing
- ISO 100-16000
- Tru-Finder EVF

Body Only.....#SOSLTA57
Kit with 18-55mm Lens.....#SOSLTA57K

16 Mega Pixels

SONY Alpha SLT-A99 DSLR

- Sony Dual AF System & Translucent Mirror
- Full-Frame Exmor CMOS Sensor
- XGA OLED Electronic VF
- 3.0" TruBlack Tilting LCD
- Uses Sony Alpha Lenses
- MS Pro Duo/HG-Duo & SD/SDHC/SDXC Card Slots
- Internal SteadyShot Image Stabilization • Full HD 1920x1080 60p Video Recording

*Body Only.....#SOSLTA99V**

24 Mega Pixels

OLYMPUS

Flash System

FL-300R Flash	169.95
FL-600R Flash	299.95
FL-50R Flash	499.95
RF-11 Ring Flash	249.95
SRF-11 Ring Flash Set	559.95
TF-22 Twin Flash	449.95
STF-22 Twin Flash Set	739.95

Zuiko 4/3 System Digital Lenses

8/3.5 Fish-eye ED	799.99
35/3.5 Macro ED (52ø)	229.95
50/2.0 Macro ED (77ø)	499.95
150/2.0 ED (82ø)	2,499.95
300/2.8 ED	6,999.95
7-14/4.0 ED (72ø)	1,799.95
11-22/2.8-3.5 ED (72ø)	799.95
12-60/2.8-4 ED SWD (72ø)	999.95
14-42/3.5-5.6 ED (58ø)	249.95
18-180/3.5-6.3 ED (62ø)	499.95
35-100/2.0 ED (77ø)	2,499.99
40-150/4-5.6 ED (58ø)	279.95
50-200/2.8-3.2 ED SWD (67ø)	1,199.95
90-250/2.8 ED (105ø)	5,999.95
EC-14 1.4x Teleconverter	439.95
EC-20 2x Teleconverter	479.95
MF-1 OM Lens Adapter	83.95

PENTAX

AF Flash System

AF-360FGZ	
AF-540FGZ	

SMCP-DA Digital AF Lenses

14/2.8 ED IF (77ø)	
15/4.0 ED AL (49ø)	
35/2.8 Mac. Limited (49ø)	
55/1.4 Limited (58ø)	
21/3.2 AL Limited "Pancake" (49ø)	
40/2.8 Limited "Pancake" (49ø)	
70/2.4 Limited "Pancake" (49ø)	
200/2.8 ED IF	
300/4.0 ED IF SDM (77ø)	
10-17/3.5-4.5 ED IF (77ø)	
12-24/4 ED AL IF (77ø)	
16-45/4 ED AL (67ø)	
16-50/2.8 ED AL IF SDM (77ø)	
17-70/4.0 AL IF SDM (67ø)	
18-55/3.5-5.6 AL II (52ø)	
50-135/2.8 ED IF SDM (67ø)	
50-200/4-5.6 ED WR (52ø)	
55-300/4-5.8 ED (58ø)	
60-250/4.0 ED IF SDM (67ø)	

AF Lenses for 35mm & Digital SLRs

31/1.8 Limited (58ø)	
50/1.4 (49ø)	
43/1.9 Limited "Pancake" (49ø)	
50/2.8 Macro (52ø) with Case	
77/1.8 Limited (49ø)	
100/2.8 D FA AW Macro (49ø)	

SONY

Compatible with Maxxum DSLRs

Flash System

HVL-F20AM	149.99
HVL-F20S	149.99
HVL-F43AM	349.99
HVL-F58AM	499.99

Digital Lenses

16/2.8 Fish-eye	999.99
20/2.8 (72ø)	749.99
24/2 Carl Zeiss (72ø)	1,399.99
35/1.4 G (55ø)	1,499.99
50/1.4 (55ø)	449.99
50/2.8 Macro (55ø)	599.99
85/1.4 Carl Zeiss (72ø)	1,699.99
100/2.8 Macro (55ø)	799.99
135/1.8 Carl Zeiss (77ø)	1,799.99
135/2.8 STF (72ø)	1,399.99
300/2.8 G APO	6,999.99
11-18/4.5-5.6 DT (77ø)	799.99
16-35/2.8 ZA SSM Carl Zeiss (77ø)	1,999.99
16-80/3.5-4.5 DT Carl Zeiss (62ø)	999.99
16-105/3.5-5.6 DT (62ø)	699.99
18-200/3.5-6.3 DT Aspherical (62ø)	549.99
18-250/3.5-6.3 DT (62ø)	649.99
24-70/2.8 Carl Zeiss (77ø)	1,999.99
70-200/2.8 G APO (77ø)	1,999.99
70-300/4.5-5.6 G (62ø)	999.99
75-300/4.5-5.6 (55ø)	249.99
1.4x Teleconverter	549.99
2x Teleconverter	549.99

OLYMPUS
50mm f/2 Macro ED Zuiko Digital Lens

- *Designed exclusively for Digital SLRs*
- Ideal for macro photography and also as a portrait lens
- Magnification 1:2
- ED glass element
- Min. focus: 9.45"
- 52mm filter diameter
- Weight: 10.6 oz

PENTAX
18-135mm f/3.5-5.6 ED AL (IF) DC WR Digital Lens

- *Designed exclusively for Digital SLRs*
- SP Coating Repels Dust, Water, & Grease
- Weight resistant
- Quick-Shift Focus System
- Min. focus: 1.3'
- 62mm filter diameter
- Weight: 14.3 oz

SONY
HVL-F58AM Shoe-Mount Digital Flash

- Zoom Head (24-105mm)
- Bounce & Swivel Head
- Guide No. 190'
- TTL Dedication
- Vari-Power
- High-Speed Sync
- Auto WB Adjustment
- Wireless Ratio Control
- Weight: 15.6 oz

SONY
16-80mm f/3.5-4.5 Carl Zeiss T* DT Digital Lens

- *Designed exclusively for Digital SLRs*
- Ideal for snapshots, portraits, interiors, or outdoor scenery
- 35mm equiv: 24-120mm
- Min. focus: 13.8"
- 62mm filter diameter
- Weight: 15.5 oz

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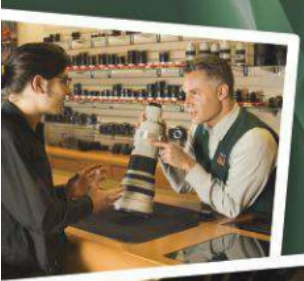

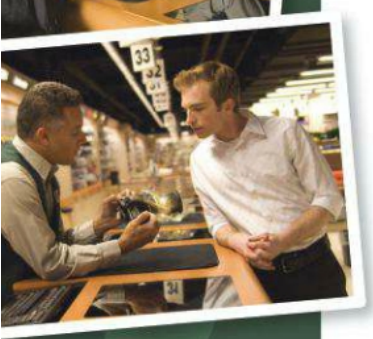

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Canon Digital Rebel T3i DSLR

- 3" Clear View Vari-Angle LCD
- Uses Canon EF Lenses (1.6x factor)
- SDHC/SDXC Card Slot
- 3.7 fps Continuous Shooting
- ISO 100-6400
- RAW + JPEG Files
- Full HD Movie Mode with Manual Exposure
- 63 Zone Dual-Layer System/9 Point AF

Expires 1-5-13

Body Only	#CAEDRT3I	—
Kit with 18-55mm IS	#CAEDRT3IK	*$100 Rebate!*
T3 Kit *with 18-55mm IS*	#CAEDRT3K	*$100 Rebate!*

18 Mega Pixels

Canon Digital Rebel T4i DSLR

- STM Lens Support for Quiet AF in Movies
- DIGIC 5 Image Processor
- 3.0" Vari-Angle Touch Screen LCD
- Uses Canon EF Lenses (1.6x factor)
- SDHC/SDXC Card Slot
- ISO 100-12800, Expandable to 25600
- Full HD Movie Mode with Continuous AF
- 5.0 FPS • Multi Shot Noise Reduction

Expires 1-5-13

Body Only	#CAEDRT4I	—
Kit with 18-55mm IS	#CAEDRT4IK	*$150 Rebate*
Kit with 18-135mm IS	#CAEDRT4IKZ	*$150 Rebate*

18 Mega Pixels

Canon EOS-60D DSLR

- 1920 x 1080 HD Video Capture
- DIGIC 4 Image Processor
- SD/SDHC/SDXC Card Slot
- Works with all Canon EF & EF-S Lenses • Vari-Angle Clear View 3.0" Flip-Out LCD
- HDMI Output to HDTV
- 5.3 fps Continuous Shooting
- ISO 6400 - Expandable to 12800

Expires 1-5-13

Body Only	#CAE60D	*$200 Rebate!*
Kit with 18-135mm IS	#CAE60D18135	*$200 Rebate!*
Kit with 18-200mm IS	#CAE60D18200	*$200 Rebate!*

18 Mega Pixels

Canon EOS-5D Mark III DSLR

- 3.2" Clear View High Resolution LCD
- DIGIC 5+ Image Processor
- 61-Point High Density AF
- Uses Canon EF Lenses
- Dual CF, SD Card Slots
- Extended ISO Range (50-102400)
- Built-In HDR & Multiple Exposure Modes
- Full HD 1080/30p and 720/60p Formats

Expires 1-5-13

Body Only	#CAE5D3*	*$200 Rebate!*
Kit with 24-105mm L IS	#CAE5D324105	*$400 Rebate!*
5D Mark II *Body Only*	#CAE5D2	*$400 Rebate!*
5D Mark II Kit *with 24-105mm L IS*	#CAE5D224105	*$400 Rebate!*

22 Mega Pixels

Canon EOS-7D DSLR

- Record HD Video • 3" LCD
- Uses Canon EF Lenses
- CF, MD Card Slot
- Dust and Weather Resistant
- Selectable Video Exposure and Frame Rates
- ISO 100-6400 (expandable to 12800) • 8 fps Burst Mode
- 19-Point, All Cross-Type AF System

Expires 1-5-13

Body Only	#CAE7D	*$200 Rebate*
Kit with 18-135mm IS	#CAE7D18135	*$200 Rebate*
Kit with 28-135mm IS	#CAE7D28135	*$200 Rebate*

18 Mega Pixels

Canon EOS-1Dx DSLR

- Dual DIGIC 5+ Image Processors
- Magnesium Alloy Body
- Eye-Level Pentaprism Viewfinder
- 3.2" LCD Monitor
- Uses Canon EF Lenses
- Dual CF card slots
- 1920 x 1080 HD Video Capture
- Live View Still and Video Recording
- 61-Point High Density Auto Focus

Body Only	#CAE1DX*	

18 Mega Pixels

Canon SLR Lenses and Flashes

Instant Rebates! Expire 1-5-13

EOS Flash System (USA)

270EX II	*$15 Rebate**	430EX II	*$45 Rebate**
320EX		580EX II	
600EX-RT	*$60 Rebate**		
MR-14EX Ringlight	*$50 Rebate**		
MT-24EX Twin Flash	*$80 Rebate**		

EF-S Lenses for Digital Only (USA)

(Not compatible with full frame cameras)

60/2.8 USM Macro (52ø)	*$60 Rebate**
10-22/3.5-4.5 USM (77ø)	*$120 Rebate**
15-85/3.5-5.6 IS USM (72ø)	*$100 Rebate**
17-55/2.8 IS USM (67ø)	*$120 Rebate**
17-85/4-5.6 IS USM (67ø)	
18-55/3.5-5.6 IS (58ø)	
18-135/3.5-5.6 IS (67ø)	
18-200/3.5-5.6 IS (72ø)	
55-250/4.0-5.6 IS USM (58ø)	

EF Lenses (USA)

20/2.8 USM (72ø)	*$50 Rebate**
24/2.8 IS USM (58ø)	*$150 Rebate**
28/1.8 USM (58ø)	*$60 Rebate**
28/2.8 IS USM (58ø)	*$100 Rebate**
35/2 (52ø)	50/1.8 II (52ø) *$15 Rebate**
40/2.8 STM Pancake (52ø)	*$50 Rebate**

EF Lenses (USA)

50/2.5 Macro (52ø)	*$30 Rebate**
50/1.4 USM (58ø)	*$60 Rebate**
MP-E 65/2.8 1x-5x Macro (58ø)	*$100 Rebate**
85/1.8 USM (58ø)	*$60 Rebate**
100/2 USM (58ø)	*$50 Rebate**
100/2.8 USM Macro (58ø)	*$50 Rebate**
28-135/3.5-5.6 IS USM (72ø)	
70-300/4-5.6 IS USM (58ø)	
70-300/4.5-5.6 DO IS USM (58ø)	
75-300/4.0-5.6 III (58ø)	
75-300/4.0-5.6 III USM (58ø)	

TS-E MF Lenses (USA)

17/4.0 "L"	*$250 Rebate**
24/3.5 "L" II	*$250 Rebate**
45/2.8	*$100 Rebate**
90/2.8	*$180 Rebate**

EF "L" Lenses (USA)

14/2.8 USM II	*$200 Rebate**
24/1.4 II (77ø)	*$200 Rebate**
35/1.4 USM (72ø)	*$150 Rebate**
50/1.2 USM (72ø)	*$180 Rebate**
85/1.2 USM II (72ø)	*$200 Rebate**
100/2.8 IS USM Macro (67ø)	*$150 Rebate**

EF "L" Lenses (USA)

135/2.0 USM (72ø)	*$100 Rebate**
180/3.5 USM Macro (72ø)	*$150 Rebate**
200/2.8 USM II (72ø)	*$50 Rebate**
200/2.0 IS USM (52ø)	
300/4.0 IS USM (77ø)	*$100 Rebate**
300/2.8 IS USM II (52ø rear)	
400/5.6 USM (77ø)	*$120 Rebate**
400/2.8 IS II (52ø rear)	600/4.0 IS II (52ø rear)
500/4 IS USM II (52ø rear)	
8-15/4.0 Fish-eye USM	*$180 Rebate**
16-35/2.8 USM II (82ø)	*$200 Rebate**
17-40/4.0 USM (77ø)	*$100 Rebate**
24-70/2.8 II USM (82ø)	
24-105/4 IS USM (77ø)	
28-300/3.5-5.6 IS USM (77ø)	
70-200/4.0 USM (67ø)	*$80 Rebate**
70-200/4.0 IS USM (77ø)	*$200 Rebate**
70-200/2.8 USM (77ø)	*$150 Rebate**
70-200/2.8 IS II USM (77ø)	*$400 Rebate**
70-300/4.0-5.6 IS USM (67ø)	*$200 Rebate**
100-400/4.5-5.6 IS USM (77ø)	*$200 Rebate**
1.4x III Teleconverter	*$70 Rebate**
2x III Teleconverter	*$70 Rebate**

NEW Canon Instant Rebates on Lenses & Speedlites

** Expire 1-5-13*

EOS Flash System	Price	Rebate	Final
270EX II	$169.99	$15	$154.99
430EX II	$299.99	$45	$254.99
600EX-RT	$629.99	$60	$569.99
MR-14EX Ringlight	$549.99	$50	$499.99
MT-24EX Twin Flash	$829.99	$80	$749.99

TS-E "L" MF Lenses	Price	Rebate	Final
17/4.0 "L"	$2,499.00	$250	$2,249.00
24/3.5 "L" II	$2,199.00	$250	$1,949.00
45/2.8	$1,399.00	$100	$1,299.00
90/2.8	$1,399.00	$180	$1,219.00

EF-S Digital Lenses	Price	Rebate	Final
60/2.8 USM Macro	$469.99	$60	$409.99
10-22/3.5-4.5 USM	$859.99	$120	$739.99
15-85/3.5-5.6 IS USM	$799.99	$100	$699.99
17-55/2.8 IS USM	$1,179.00	$120	$1,059.00

EF Lenses	Price	Rebate	Final
20/2.8 USM	$539.99	$50	$489.99
24/2.8 IS USM	$849.99	$150	$699.99
28/1.8 USM	$509.99	$60	$449.99
28/2.8 IS USM	$799.99	$100	$699.99
40/2.8 STM Pancake	$199.99	$50	$149.99
50/1.8 II	$125.99	$15	$110.99
50/2.5 Macro	$299.99	$30	$269.99
50/1.4 USM	$399.99	$60	$339.99
MP-E 65/2.8 Macro	$1,049.00	$100	$949.00
85/1.8 USM	$419.99	$60	$359.99
100/2 USM	$499.99	$50	$449.99
100/2.8 USM Macro	$599.99	$50	$549.99

EF "L" Lenses	Price	Rebate	Final
14/2.8 USM II	$2,359.00	$200	$2,159.00
24/1.4 II	$1,749.00	$200	$1,549.00
35/1.4 USM	$1,479.00	$150	$1,329.00
50/1.2 USM	$1,619.00	$180	$1,439.00
85/1.2 USM II	$2,199.00	$200	$1,999.00
100/2.8 IS USM Macro	$1,049.00	$150	$899.00
135/2.0 USM (72ø)	$1,089.00	$100	$989.00
180/3.5 USM Macro	$1,579.00	$150	$1,429.00
200/2.8 USM II (72ø)	$819.99	$50	$769.99
300/4.0 IS USM (77ø)	$1,449.00	$100	$1,349.00
400/5.6 USM (77ø)	$1,339.00	$120	$1219.00
8-15/4.0 Fish-eye USM	$1,499.00	$180	$1,319.00
16-35/2.8 USM II	$1,699.00	$200	$1,499.00
17-40/4.0 USM	$839.99	$100	$739.99
70-200/4.0 USM (67ø)	$709.99	$80	$629.99
70-200/4.0 IS USM	$1,349.00	$200	$1,149.00
70-200/2.8 USM (77ø)	$1,449.00	$150	$1,299.00
70-200/2.8 IS II USM	$2,499.00	$400	$2,099.00
70-300mm IS USM	$1,599.00	$200	$1,399.00
100-400mm IS USM	$1,699.00	$200	$1,499.00
1.4x III Teleconverter	$499.99	$70	$429.99
2x III Teleconverter	$499.99	$70	$429.99

Nikon 1 J2 Mirrorless Digital Camera

- EXPEED 3 Dual Image Processor
- Full HD 1080p Movie with Stereo Sound
- Interchangeable 1 NIKKOR Lens System
- 3.0" LCD • Panoramic Mode
- SD/SDHC/SDXC Card Slot
- Selective Color & Backlighting Modes
- Night Portrait & Night Landscape Modes
- Nikon Inc. limited warranty included

Valid Through 1-5-13

10 Mega Pixels

Available in Black, Orange, Pink, Red, Silver or White	Price	Rebate	Final Cost
1 J2 Kit with 10-30mm VR *#NI1J21030**	546.95	—	—
1 J2 Kit with 10-30 & 30-110mm VR *#NI1J21030K**	796.95	$100	696.95
1 J1 Kit with 10-30 & 30-110mm VR *#NI1J11030**	846.95	$350	496.95

Nikon D3200 DSLR

Valid Through 1-5-13

- EXPEED III Image Processor
- HD 1080p Video
- 3" LCD • Live View
- Uses Nikon AF Lenses (1.5x factor)
- SD/SDHC/SDXC Card Slot
- 11-point AF • Up To ISO 12800
- Nikon Inc. limited warranty included

24 Mega Pixels

D3200 is available in Black or Red	Price	Rebate	Final Cost
D3200 Kit Black w/18-55mm VR *#NID32001855**	696.95	$100	596.95
D3100 Kit with 18-55mm VR *#NID31001855*	646.95	$170	476.95
D5100 Kit with 18-55mm VR *#NID51001855*	796.95	$250	546.95

Nikon D7000 DSLR

Valid Through 1-5-13

- EXPEED 2 Image Processor
- 1080p HD Video Capture
- RAW + JPEG Still Image Capture
- Accepts Nikon AF Lenses (1.5x factor) • 3" LCD Monitor
- Twin SD/SDHC/SDXC Card Slots
- RGB 3D Matrix Metering System
- Nikon Inc. limited warranty included

16 Mega Pixels

	Price	Rebate	Final Cost
Body Only *#NID7000*	1,196.95	$300	896.95
Kit with 18-105mm VR *#NID700018105*	1,496.95	$300	1,196.95
Kit with 18-200mm VR II *#NID700018200*	2,046.95	$550	1,496.95

Nikon D600 DSLR

** Valid 12-30-12 through 1-5-13

- FX-Format (Full-Frame) CMOS Sensor
- Uses Nikon AF Lenses
- 3.2" LCD • EXPEED 3 Processor
- SD/SDHC/SDXC Card Slot
- 1080p HD Video Capture
- 5.5 fps Continuous Shooting
- 39 Wide-Area AF Focus Points
- 100-6400 ISO, Expandable to 50-25600
- Nikon Inc. limited warranty included

24 Mega Pixels

	Price	Rebate	Final Cost
Body Only *#NID600* Valid Through 1-5-13	2,096.95	$100	1,996.95
Kit with 24-85mm VR Lens** *#NID6002485*	2,696.95	$200	2,496.95

Nikon D800 DSLR

Valid Through 12-29-12

- 35.9x24mm CMOS FX Format Sensor
- 3.2" LCD Monitor
- CF & SD Dual Card Slots
- Nikon F Mount Lens Mount
- Optical Low-Pass Filter
- Eye-Level Pentaprism Viewfinder
- 1920 x 1080/30/25/24p HD Video Capture • Matrix/Center-Weighted/Spot Metering
- Nikon Inc. limited warranty included

36 Mega Pixels

	Price	Rebate	Final Cost
Body Only *#NID800*	2,996.95	$200	2,796.95

Nikon D4 DSLR

- RAW, TIFF, JPEG, RAW+JPEG Files
- FX-format (full-frame) CMOS Sensor
- 1080p HD Broadcast Quality Video
- EXPEED3 Image Processor
- 3.2" LCD Screen with Live View
- Compatible with Most Nikkor Optics
- Matrix, Center-Weighted, Spot Metering • 100-12800 ISO
- CF Type 1 & XQD Compatible
- Nikon Inc. limited warranty included

Body Only *#NID4* 5,996.95

16 Mega Pixels

Nikon SLR Lenses and Flashes

Instant Savings! Expire 1-5-13

AF Flashes

	Price	Final Cost
SB-400		
SB-700	326.95	296.95 [A]
SB-910	546.95	496.95 [B]
R1 Wireless Twin Flash		
R1C1 Wireless Twin Flash System		

DX ED-IF Lenses for Digital Only

	Price	Final Cost
10.5/2.8 Fish-Eye		
35/1.8 G AF-S (52ø)	196.95	—
40/2.8 G AF-S Micro (52ø)	276.95	—
85/3.5 G ED VR Micro (52ø)	526.95	426.95 [C]
10-24/3.5-4.5 G AF-S (77ø)		
12-24/4 G AF-S (77ø)		
16-85/3.5-5.6 G AF-S VR (67ø)		
17-55/2.8 G AF-S (77ø)		
18-55/3.5-5.6 G AF-S II (52ø)		
18-55/3.5-5.6 G AF-S VR (52ø)	196.95	—
18-105/3.5-5.6 G AF-S VR (67ø)	396.95	—
18-200/3.5-5.6 G AF-S VR II (72ø)	846.95	596.95 [D]
18-300/3.5-5.6 G AF-S ED VR (77ø)	996.95	—
55-200/4-5.6 G AF-S (52ø)		
55-200/4-5.6 G AF-S VR (52ø)	246.95	146.95 [E]
55-300/4.5-5.6 G AF-S VR (58ø)	396.95	246.95 [F]

D-Type AF Lenses

	Price	Final Cost
14/2.8 D ED		
16/2.8 D (39ø) with Hood		
20/2.8 D (62ø)		
24/2.8 D (52ø)		
24/1.4 G AF-S ED (77ø)		
24/3.5 D ED PC-E (77ø)		
28/1.8 G AF-S (67ø)	696.95	—
28/2.8 D (52ø)		
35/2.0 D (52ø)		
35/1.4 G AF-S ED (67ø)		
45/2.8 D ED PC-E Micro (77ø)		
50/1.8 D (52ø)		
50/1.8 G AF-S (58ø)	216.95	—
50/1.4 D (52ø)		
50/1.4 G AF-S (58ø)		
60/2.8 D Micro (62ø) (1:1)		
60/2.8 G AF-S ED Micro (62ø)		
85/1.8 D (62ø) with Hood		
85/1.4 D IF (77ø)		
85/1.4 G AF-S (77ø)		
85/1.8 G AF-S (67ø)	496.95	—
85/2.8 PC-E Micro (77ø)		
105/2.8 G AF-S ED-IF VR Micro (62ø)		
105/2.0 DC D with Hood (72ø)		
180/2.8 D ED-IF (72ø)		

D-Type AF Lenses

	Price	Final Cost
200/4 D ED-IF Micro with Case (62ø)		
200/2 G AF-S ED-IF VR II (52ø)		
300/4.0 D AF-S ED-IF (77ø)		
300/2.8 G AF-S VR (52ø-R)		
400/2.8 G AF-S VR ED (52ø)		
500/4.0 G AF-S VR ED (52ø)		
600/4.0 G AF-S VR ED (52ø)		
14-24/2.8 G AF-S ED-IF	1,996.95	—
16-35/4.0 G AF-S ED VR (77ø)		
17-35/2.8 D AF-S ED-IF (77ø)		
24-70/2.8 G AF-S ED-IF (77ø)	1,886.95	1686.95 [G]
24-85/2.8-4.0 D IF (72ø)		
24-85/3.5-4.5 G AF-S ED VR (72ø)	596.95	496.95 [H]
24-120/4.0 G AF-S ED VR (77ø)	1,296.95	—
28-300/3.5-5.6 G AF-S ED VR (77ø)	1,046.95	896.95 [I]
70-200/2.8 G AF-S ED-IF VR II (77ø)	2,396.95	2196.95 [J]
70-300/4.0-5.6 G (62ø)		
70-300/4.5-5.6 G-AFS VR (67ø)	586.95	386.95 [K]
80-200/2.8 D with Collar (77ø)		
80-400/4.5-5.6 D VR (77ø)		
200-400/4 G AF-S ED VR II (52ø)		
TC-14E II (1.4x) Teleconverter		
TC-17E II (1.7x) Teleconverter		
TC-20E III (2x) Teleconverter		

NEW Nikon

Instant Savings up to $600 on Select DSLRs Flash & Lens Combos

Expire 1-5-13

Receive Instant Flash/Lens Savings

		Lens	Price	Savings	Final
Buy Flash [A or B] **with** any current Nikon **DSLR**	[A]	SB-700	$326.95	$30	$296.95
	[B]	SB-910	$546.95	$50	$496.95
Buy Lens [C or D] **with** D3100, D3200, D5100, D90, D7000 or D300s **DSLR**	[C]	85mm f/3.5 G ED VR Micro DX	$526.95	$100	$426.95
	[D]	18-200mm f/3.5-5.6 G DX	$846.95	$250	$596.95
Buy Lens [E or F] **with** D3000, D3100, D3200, D5100, D7000, D90 **DSLR**	[E]	55-200mm f/4.0-5.6 G DX	$246.95	$100	$146.95
	[F]	55-300mm f/4.5-5.6 G DX	$396.95	$150	$246.95
Buy Lens [G, H, I, J or K] **with** D7000, D300s, D600, D800, D800E, D3x or D4 **DSLR**	[G]	24-70mm f/2.8 G	$1,886.95	$200	$1,686.95
	[H]	24-85mm f/3.5-4.5 G AF-S ED VR	$596.95	$100	$496.95
	[I]	28-300mm f/3.5-5.6 G AF-S VR	$1,046.95	$150	$896.95
	[J]	70-200mm f/2.8 G AF-S ED-IF VR II	$2,396.95	$200	$2,196.95
	[K]	70-300mm f/4.5-5.6 G-AFS VR	$586.95	$200	$386.95

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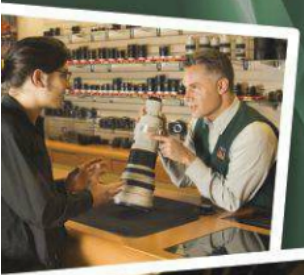

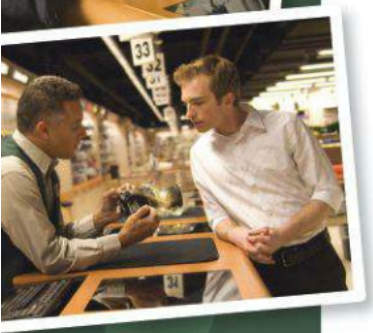

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TAMRON AF LENSES

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Di for both digital and film SLR cameras • **Di-II** for Digital SLRs Only • **Di III** for mirror-less cameras Only

C = Canon N = Nikon P = Pentax SM = Sony/Minolta SE = Sony E Mount ** Price After Rebate Expires 12-31-12

		SKU #	Available for	Rebate	Price
Di-II	60/2.0 LD IF Macro (55ø)	#TA602DI*	C, N, SM	$100	424.00**
Di	90/2.8 Macro (55ø)	#TA9028M*	C, N, P, SM	$50	449.00**
Di	90/2.8 SP Macro USD (58ø)	#TA9028VC*	C, N, SM	—	749.00
Di	180/3.5 LD IF Macro (72ø)	#TA18035*	C, N, SM	$50	689.00**
Di-II	10-24/3.5-4.5 (77ø)	#TA102435*	C, N, P, SM	$50	449.00**
Di-II	17-50/2.8 XR LD IF Aspherical (67ø)	#TA175028*	C, N, P, SM	$75	424.00**
Di-II	17-50/2.8 XR VC LD IF Asph. (67ø)	#TA175028*Q	C, N	$100	549.00**
Di-II	18-200/3.5-6.3 (62ø)	#TA1820035*	C, N, P, SM	$50	249.00**
Di-III	18-200/3.5-6.3 VC (62ø) Black or Silver	#TA1820035S*	SE	—	739.00
Di-II	18-270/3.5-6.3 VC PZD (62ø)	#TA18270*	C, N, SM	$100	549.00**
Di	24-70/2.8 VC USD (82ø)	#TA247028*	C, N, SM	—	1,299.00
Di	28-75/2.8 XR (67ø)	#TA287528*	C, N, P, SM	$25	474.00**
Di	28-300/3.5-6.3 XR LD (62ø)	#TA2830035XD*	C, P, SM	—	419.00
Di	28-300/3.5-6.3 XR VC (62ø)	#TA2830035*	C, N	—	629.00
Di	70-200/2.8 LD IF Macro (77ø)	#TA7020028M*	C, N, P, SM	—	769.00
Di	70-300/4.0-5.6 VC USD (62ø)	#TA70300*	C, N, SM	$100	349.00**
Di	75-300/4.0-5.6 LD (62ø)	#TA753004*	C, N, SM	—	164.00
Di	200-500/5-6.3 LD IF (86Cø)	#TA2005005*	C, N, SM	—	949.00
	1.4x SP AF Pro Teleconverter	#TA14XP*	C, N	—	224.00
	2x SP AF Pro Teleconverter	#TA2XP*	C, N	—	254.00

Tokina AF LENSES

DX – for Digital SLRs Only **FX** – Designed for full frame DSLRs ** Price After Rebate Exp. 1-31-13

		Canon EOS	Nikon AF	Rebate	Price
FX	100/2.8 Pro D Macro (52ø)	#TO10028PCAF	#TO10028PNAF	—	489.00
DX	10-17/3.5-4.5 ATX Fisheye	#TO101735CAF	#TO101735NAF	—	669.00
DX	11-16/2.8 Pro II (77ø)	#TO111628PCII	#TO111628PNII	$40	699.00**
DX	12-24/4.0 Pro II (77ø)	#TO12244DXC	#TO12244DXN	—	499.00
FX	16-28/2.8 Pro	#TO1628FXC	#TO1628FXN	$100	749.00**
FX	17-35/4 Pro (82ø)	#TO1735F4FXC	#TO1735F4FXN	$70	599.00**

FLASHES

Metz

28 CS-2 Digital Slave Shoe Mount Flash	139.99
44 AF-1 Digital Shoe Mount Flash	199.99
50 AF-1 TTL Digital Shoe Mount Flash	249.99
58 AF-2 TTL Digital Shoe Mount Flash	399.99
45 CL-4 TTL Digital Handle Mount Flash	519.99
45 CL-4 TTL Digital Handle Mount Flash Kit	699.99
76 MZ-5 TTL Digital Handle Mount Flash	1,039.99

Quantum

Q-flash TRIO	875.00
Q-flash T5D-R	706.00
Q-flash T5D-R with Turbo SC Battery & Charger	1,172.00
Q-flash T5D-R with Turbo 3 Battery Kit	1,330.00

Batteries

Battery 1	224.00	Turbo Blade	466.00
Turbo SC	466.00	Turbo 3	624.00

SUNPAK

E-Flash Flat Panel Kit #SUFP38	58.95
PF20XD Digital Slave Shoe Mount Flash	44.95
RD-2000 Shoe Mount Flash	64.95
DF3000 Digital for Canon, Nikon, Sony	79.95
PZ-4000 AF TTL Shoe Mount f/Canon, Nikon	79.95
PZ-40x II AF TTL Shoe Mount f/Nikon (Silver)	69.95
PZ-42x AF TTL Shoe Mount for Canon, Nikon	139.00
622 Super Pro TTL Handle Mount Flash	179.95

Vivitar

285HV Professional Auto	85.00
Pearstone SB-4 AC Adapter for 285HV #PESB4	14.95

SIGMA AF LENSES & FLASHES

New! Instant Rebates up to $200 Expires 1-15-13 ** Price After Rebate

DC – for Digital SLRs Only • **DG** – Optimized for Digital SLRs

H – HSM Model with Canon, Nikon, Sigma
R – Rear Slip-in Gelatin Filter Slot

		Canon	Nikon	Pentax	Sigma	Sony	Rebate	Price
DC	4.5mm f/2.8 EX Circular Fisheye HSM R	#SI4528EXDCC	#SI4528EXDCN	#SI4528EXDCP	#SI4528EXDCSI	#SI4528EXDSO	$100	799.00**
DG	8/3.5 EX Circular Fisheye R	#SI835CA	#SI835NA	—	#SI835SI	#SI835SO	—	899.00
DC	10mm f/2.8 EX Fisheye HSM R	#SI1028EXDCC	#SI1028EXDCN	#SI1028EXDCP	#SI1028EXDCSI	#SI1028EXDCSO	—	649.00
DG	15/2.8 EX Diagonal Fisheye R	#SI1528DGCAF	#SI1528DGNAF	#SI1528DGPAF	#SI1528DGSA	#SI1528DGMAF	—	609.00
DG	20/1.8 EX DF RF Aspherical (82ø)	#SI2018CAF	#SI2018NAF	#SI2018PAF	#SI2018SA	#SI2018MAF	—	629.00
DG	24/1.8 EX DF Aspherical Macro (77ø)	#SI2418MCAF	#SI2418MNAF	#SI2418MPAF	#SI2418MSA	#SI2418MMAF	—	549.00
DG	28/1.8 EX DF Aspherical Macro (77ø)	#SI2818MCAF	#SI2818MNAF	#SI2818MPAF	#SI2818MSA	#SI2818MMAF	—	449.00
DC	30mm f/1.4 EX HSM (62ø)	#SI3014DCCAF	#SI3014DCNAF	#SI3014DCPAF	#SI3014DCSA	#SI3014DCMAF	—	489.00
DG	35/1.4 HSM (67ø)	#SI3514C	#SI3514N	#SI3514P	#SI3514SI	#SI3514S	—	899.00
DG	50mm f/1.4 EX (77ø) H	#SI5014C	#SI5014N	#SI5014PE	#SI5014SI	#SI5014SOM	$50	449.00**
DG	50/2.8 EX Macro (55ø)	#SI5028MDGCAF	#SI5028MDGNAF	#SI5028MDGPAF	#SI5028MDGSA	#SI5028MDGMAF	—	369.00
DG	70/2.8 EX Macro (62ø)	#SI7028MDGCA	#SI7028MDGNA	#SI7028MDGPA	#SI7028MDGSA	#SI7028MDGSAQ	—	499.00
DG	85/1.4 EX HSM (77ø)	#SI8514C	#SI8514N	#SI8514P	#SI8514SI	#SI8514S	$75	894.00**
DG	105/2.8 EX Macro OS HSM (62ø)	#SI10528MDGCE	#SI10528MDGNQ	—	#SI10528MDGS	#SI10528MDGSM	$200	769.00**
DG	150/2.8 EX APO Macro OS HSM (72ø)	#SI15028AMOC	#SI15028AMON	#SI15028AMOP	#SI15028AMSI	#SI15028AMOS	—	1,099.00
DG	180/2.8 EX APO Macro OS HSM (86ø)	#SI18028AMEOC	#SI18028AMEON	—	#SI18028AMEOQ	#SI18028AMEOS	—	1,699.00
DG	300/2.8 APO EX HSM	#SI30028DGCAF	#SI30028DGNAF	#SI30028DGPAF	#SI30028DGSA	#SI30028DGMAF	—	3,399.00
DG	500/4.5 APO EX HSM	#SI50045DGCAF	#SI50045DGNAF	#SI50045DGPAF	#SI50045DGSA	—	—	4,999.00
DC	8-16/4.5-5.6 HSM	#SI8164556CA	#SI8164556NI	#SI8164556PE	#SI8164556SI	#SI8164556SO	$50	649.00**
DC	10-20/4-5.6 EX HSM (77ø)	#SI102045DCAF	#SI102045DNAF	#SI102045DPAF	#SI102045DSA	#SI102045DMAF	—	479.00
DC	10-20/3.5 EX HSM (82ø)	#SI102035C	#SI102035SN	#SI102035P	#SI102035SG	#SI102035S	$50	599.00**
DG	12-24/4.5-5.6 EX Aspherical HSM II	#SI122445C	#SI122445N	#SI122445P	#SI122445SI	#SI122445S	—	949.00
DC	17-70/2.8-4.0 OS Macro HSM (72ø)	#SI177028DCC	#SI177028DCNQ	—	#SI177028DCSI	#SI177028DCSM	$50	399.00**
DC	18-50/2.8-4.5 OS HSM (67ø)	#SI185028DOC	#SI185028DON	#SI185028DOP	#SI185028DOSG	#SI185028DOS	—	199.00
DC	18-125/3.8-5.6 OS (Optical Stabilizer) (67ø) H	#SI18125350SC	#SI18125350SN	#SI18125350SP	—	#SI18125350SS	—	339.00
DC	18-200/3.5-6.3 OS II HSM (72ø)	#SI1820035CQ	#SI1820035NQ	#SI1820035P	#SI1820035SAQ	#SI1820035SQ	$50	449.00**
DC	18-250/3.5-6.3 OS HSM (72ø)	#SI1825035C	#SI1825035N	#SI1825035CP	#SI1825035S	#SI1825035CSN	—	399.00
DC	18-250/3.5-6.3 OS Macro HSM (62ø)	#SI1825035MC	#SI1825035MN	#SI1825035MP	#SI1825035MS	#SI1825035MO	—	549.00
DG	24-70/2.8 EX IF HSM (82ø)	#SI247028C	#SI247028NF	#SI247028PS	#SI247028S	#SI247028SM	$75	824.00**
DC	50-150/2.8 EX APO OS HSM (77ø)	#SI5015028CA	#SI5015028NA	—	#SI5015028SAF	—	$100	999.00**
DG	50-500/4.5-6.3 APO OS HSM (95ø)	#SI505004563C	#SI505004563N	#SI505004563P	#SI505004563SA	#SI505004563SM	$150	1,509.00**
DG	70-200/2.8 EX APO OS HSM (77ø)	#SI7020028CQ	#SI7020028NI	#SI7020028P	SI7020028SIQ	#SI7020028SOQ	$150	1,249.00**
DG	70-300/4-5.6 Macro (58ø)	#SI703004SCAF	#SI703004S6N	#SI703004PAF	#SI703004SA	#SI703004MAF	$25	144.00**
DG	70-300/4-5.6 APO Macro (58ø)	#SI703004DGCA	#SI70300456AN	#SI703004DGPA	#SI703004DGSA	#SI703004DGMA	—	199.00
DG	70-300/4-5.6 OS (62ø)	#SI7030045C	#SI7030045N	#SI7030045P	#SI7030045S	#SI7030045SM	$50	309.00**
DG	120-300/2.8 EX APO OS HSM (105ø)	#SI12030028C	#SI12030028N	#SI12030028P	#SI12030028SI	—	$200	2,999.00**
DG	120-400/4.5-5.6 APO OS HSM (77ø Rear)	#SI120400C	#SI120400N	#SI120400P	#SI120400S	#SI120400SQ	—	999.00
DG	150-500/5-6.3 APO OS HSM	#SI150500C	#SI150500N	#SI150500P	#SI150500S	#SI150500M	—	1,069.00
DG	1.4x EX APO Tele-Converter	#SI1.4XDGCAF	#SI1.4XDGNAF	#SI1.4XDGPAF	#SI1.4XDGSA	#SI1.4XDGMAF	$25	224.00**
DG	2x EX APO Tele-Converter	#SI2XDGCAF	#SI2XDGNAF	#SI2XDGPAF	#SI2XDGSA	#SI2XDGMAF	$50	249.00**
DG	EF-610 ST	#SIEF610STC	#SIEF610STN	#SIEF610STP	#SIEF610STSI	#SIEF610STS	$30	135.00**
DG	EF-610 Super Flash	#SIEF610C	#SIEF610N	#SIEF610P	#SIEF610SI	#SIEF610S	$30	225.00**
DG	EM-140 TTL Ringlight	#SIEM140DGC	#SIEM140DGN	#SIEM140DGP	#SIEM140DGS	#SIEM140DGM	$30	349.00**

SIGMA
18-200mm f/3.5-6.3 DC II OS HSM Digital Lens

- *Designed exclusively for Digital SLRs*
- Focus 1.5' to Infinity
- Mag. ratio: 1:3.8
- 72mm filter diameter
- Weight: 17.3 oz

$50 REBATE!

SIGMA
70-200mm f/2.8 EX APO OS HSM DG Lens

- *Desirable for Digital SLRs*
- Minimum focus: 4.59'
- 34-12.3° angle of view
- 77mm filter diameter
- Tripod collar
- Weight: 50.4 oz

$150 REBATE!

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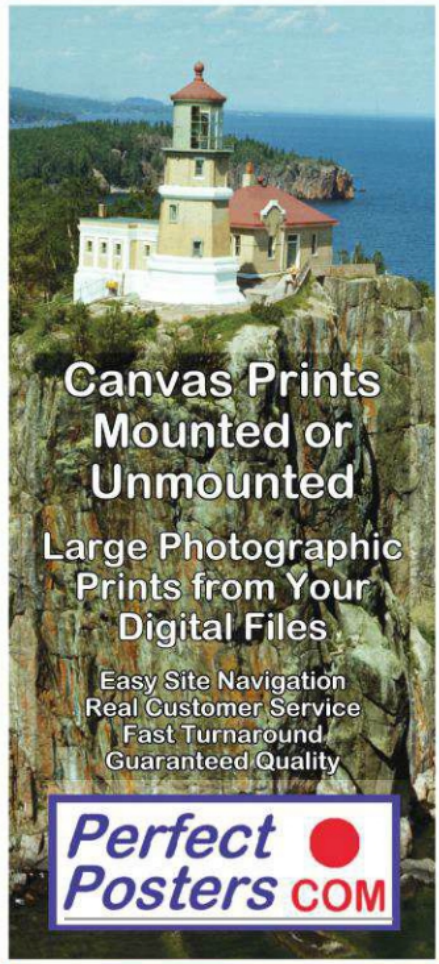

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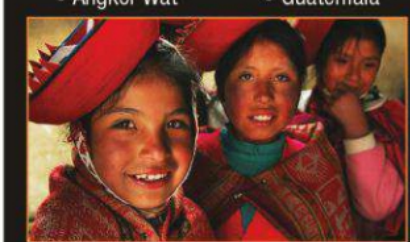

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PENTAX'S LEAST EXPENSIVE PRIME

PENTAX SPENT the year 2012 aggressively building out its lens lineup with glass designed for serious photographers. It unveiled its HD 560mm f/5.6 ED AW supertele, its generous 15X all-in-one 18–270mm, and its shockingly compact 40mm f/2.8 pancake. Then there is this 50mm f/1.8 DA SMC ($250, street), which seems more of a workaday tool than an exceptional instrument.

A 76mm full-frame equivalent, this APS-C short telephoto prime lens offers standard Pentax features such as the Super Protect coating that's resistant to dust, water spots, and fingerprints. The Quick Shift Focus system allows you to reach up and focus manually while the AF/MF switch is set to autofocus.

At less than five ounces, the lens is unusually light, a fact that's due, in part, to its plastic lensmount. In its dimensions, it is almost identical to Pentax's faster, familiar, film-era 50mm f/1.4 SMCP-FA, which is still in the lineup and streets for an attractive $360. (The faster lens actually takes smaller 49mm filters, versus 52mm for this one.)

Our test lens' manual-focus ring had a nice turning action, with a luxuriously long, 190-degree turning radius that's well suited to the fine focusing required for shooting at shallow depth-of-field apertures like f/1.8. With the exception of its model name, the lens offers no barrel markings.

In our field tests on a Pentax K-01, this lens' manual focus—used in concert with the crazy-cool focus peaking feature, which outlines sharp areas in your frame in white on the LCD screen—totally made up for its unusually

CONTINUES ON PAGE 88

DAN BRACAGLIA

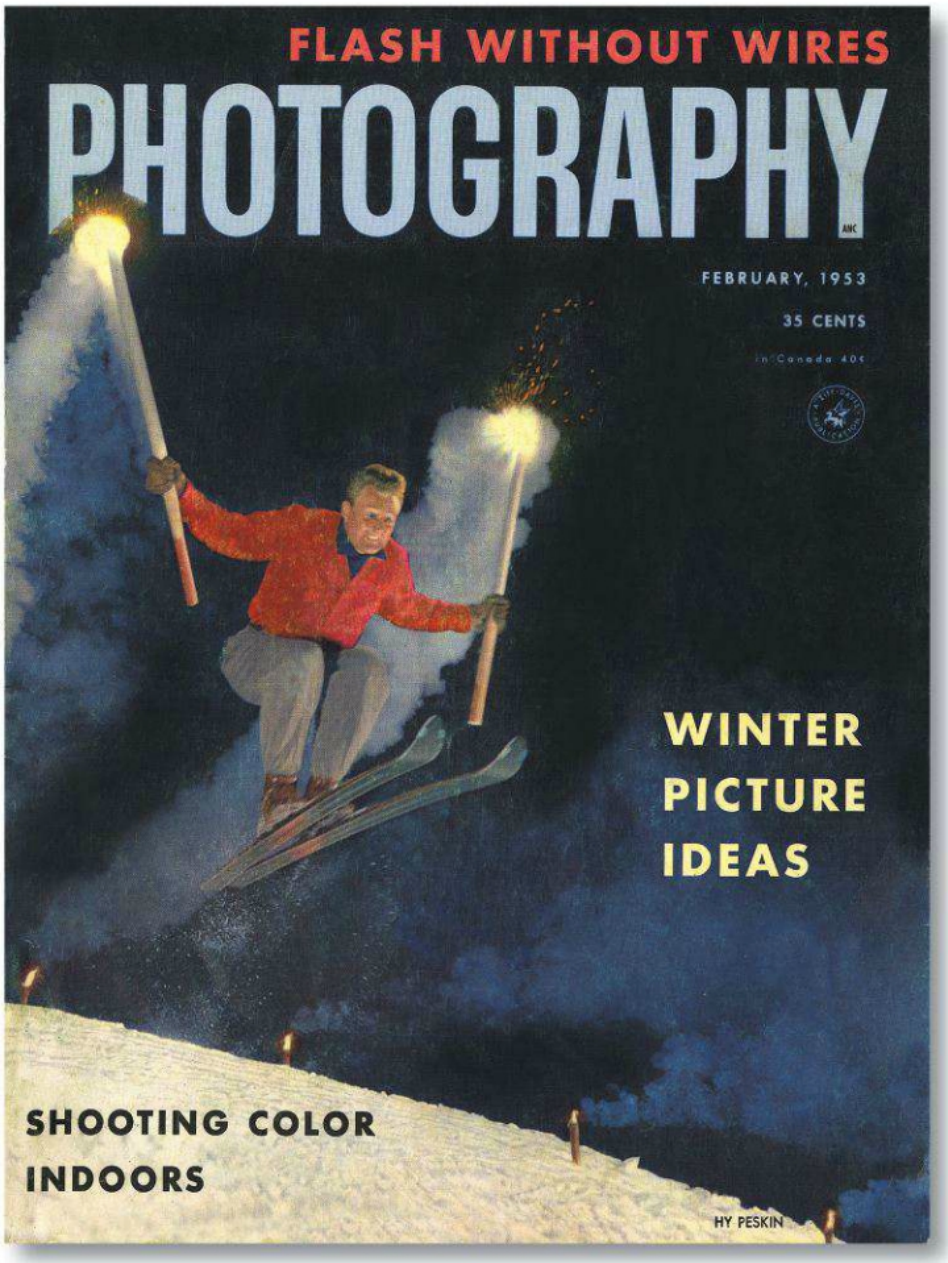
PENTAX-DA 50MM F/1.8
WHAT'S HOT
Very light weight and optically strong.
WHAT'S NOT
Case and lens hood not included. Noisy AF.
WHO IT'S FOR
Pentax shooters craving speed in a short tele prime.

SPECIFICATIONS

50MM (51.35mm tested), f/1.8 (1.76 tested), 6 elements in 5 groups. Focus ring turns 190 degrees.
DIAGONAL VIEW ANGLE: 31 degrees.
WEIGHT: 0.31 lbs. **FILTER SIZE:** 52mm.
MOUNTS: Pentax AF.
STREET PRICE: $250.
WEBSITE: pentaximaging.com

TEST RESULTS

DISTORTION: 0.06% (Imperceptible) barrel.
LIGHT FALLOFF: Gone by f/2.5.
CLOSE-FOCUSING DISTANCE: 17 inches.
MAXIMUM MAGNIFICATION RATIO: 1:5.87.



▲ Flashy Technique

Sports shooter Hy Peskin took the cover photo while on assignment in Sun Valley. The nocturnal skier, Lief Odmark, was a champion and an instructor. Peskin used a 4x5 Anniversary Speed Graphic with a 5¼-inch f/4.7 Kodak Ektar lens. His exposure on Daylight Ektachrome: 1/400 sec at f/8. Lighting was provided by six blue 22B flashbulbs.

60 YEARS AGO

Bob Schwalberg wrote about Suzanne Szasz's "Polio Picture Story."

▼ Family Silhouettes

In this article by Frank N. Sachs, the author described the production of silhouettes, a style apart from the conventional family photo. Both decorative and intriguing, these provided a new look for personal pictures without the need for expensive photographic equipment or advanced darkroom or lighting techniques.

▲ Directing Your Own Movies

Joseph V. Mascelli demonstrated that, with techniques from a film professional's playbook, home movies could be as visually interesting to an audience as a theatrical presentation. He wrote that while a cameraman is merely an "artistic technician," the home-movie maker must also act as a director, considering factors such as continuity, camera angles, build-up, and tempo. One key to holding viewers' interest? Never underestimate the importance of the human element.

▼ Graflex Down the Garden Path?

With the increasing popularity of roll-film twin-lens reflex cameras, the venerable firm Graflex decided to follow the leaders and acquire the Ciro company, producers of the American-made Ciroflex. This camera was rugged and easy to use, while the lenses varied from adequate to very good. Although priced below Rollei's TLR models, the Graflex 22 was austere and helped spell the end for Graflex.

—Harold Martin

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LAB * LENS TEST

SIGMA 35MM F/1.4 DG HSM AF

CONTINUED FROM PAGE 70

Theoretically, this yields a longer working life.

On first meeting, it's the cosmetic changes that jump out at you. Etched barrel markings on a largely polycarbonate housing are rare. Finely ribbed elements evoke the exclusivity of pricey Zeiss optics. A unique rubberized band on the lens shade creates a more uniform look overall. Sigma's new super-matte black surfacing contrasts with a chrome medallion inscribed with an A (for Art).

In the hands, the lens feels average for its class. The focusing ring has a nice, well-damped turning action, and the AF on our Canon EOS 5D Mark III was fast enough, sure, and nearly silent.

On our optical bench, sharpness and contrast of the Sigma slipped slightly below other recently tested, high-speed 35mm primes from Nikon, Rokinon, and Zeiss. In DxO Anaylzer 4.1 tests of distortion control, however, the Sigma proved clearly superior to those lenses.

Optically, this new Sigma lens is the equal or better of most of today's high-speed wide-angles. It delivers everything you would hope and expect. With its above-average distortion control, it's especially well suited to interior or exterior architectural work. If this is what we have to look forward to with Sigma's Global Vision program, we say "Bring 'em on!" —*Julia Silber*

SUBJECTIVE QUALITY FACTOR

Our standard lens test, SQF rates sharpness by print size

35 MM

Size	5x7	8x10	11x14	16x20	20x24
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2.0	96.8	95.8	93.4	88.3	81.9
2.8	97.2	96.3	94.2	89.9	84.6
4.0	97.0	96.1	93.9	89.2	83.4
5.6	97.0	96.1	93.8	89.2	83.3
8.0	96.8	96.0	93.7	89.0	83.1
11.0	96.7	95.7	93.2	88.2	81.8
16.0	96.3	95.1	92.4	86.6	79.3

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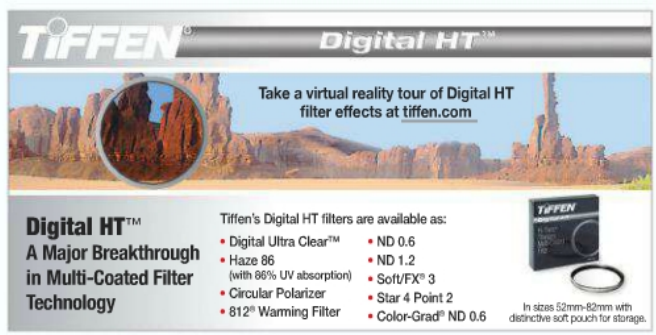
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CONTINUED FROM PAGE 65

for your photos will dictate how much you would employ for any given image.

However, it's nice to know that even at ISO 6400, with 75% noise reduction applied, the Monochrom still maintained an Excellent rating in resolution with 2530 lines. Even at ISO 10,000, with 100% reduction, the Monochrom delivered 2290 lines.

Chances are you won't use such a heavy hand. The noise in images from the Monochrom appears as an extremely fine grain that may not be objectionable in some scenarios. Furthermore, since noise tends to diminish a bit when images are printed, finished photographs from this Leica, especially at medium or small sizes, might not need much noise reduction at all. The image in Showcase (page 8) was captured at ISO 6400, had no noise reduction applied, and we think it looks wonderful as it is.

In the Field

If you are familiar with Leicas, then you basically already know how it feels to shoot with the M Monochrom. If you haven't used a Leica, you're in for a treat. The bright frame in the rangefinder is indeed bright, so focusing manually is a joy. With the disappearance of split-image focusing screens in SLRs, it's an all-too-infrequent pleasure to have some visual reassurance that you're focusing correctly. The downside to not looking through the lens is that you have to pay close attention to your metering—don't forget to take the lens cap off.

The Monochrom's finder is parallax-corrected and has framing lines that display in pairs for 35mm and 135mm, 28mm and 90mm, or 50mm and 75mm lenses. As long as you use lenses with Leica's proprietary 6-bit code, the body will automatically select the appropriate framing lines in the finder. You can also select them manually through the menu.

As is always the case with Leica, and more recently with the Fujifilm X-Pro1, there's no built-in diopter. If you need, or simply desire, to correct the finder for your vision, you'll have to buy a new eyepiece, which will set you back about $100.

Shooters used to all the information displayed in a DSLR's viewfinder might feel this display a tad sparse. Rangefinder fans will likely counter that much of the info you get with a DSLR is unnecessary when shooting with this kind of camera. We acknowledge this, but it would be nice to have info such as ISO and memory card capacity in the finder, and it would be an improvement on Leica's already great products.

Without color, video, or autofocus, there's not a whole lot to adjust on the M Monochrom. One of the few things you can do is add color toning to your JPEGs. You can select from Sepia, Cool, and Selenium effects at one of two intensity levels. We typically add things like this after the fact, but it's nice to see them here and, depending on the subject matter, we might actually use them on occasion.

Speaking of color toning, we should mention that this black-and-white camera outputs its JPEGs in the sRGB color space. Furthermore, you can choose from any color space that Lightroom supports when converting from RAW. This opens up opportunities for photographers who like to experiment with mixing color layers from different images to create fantastic effects.

Other than the shutter speed, the only info display in the finder is exposure comp, which can be set to be adjusted by turning the large control wheel on the back of the camera.

SPECIFICATIONS

IMAGING: 18MP effective, full-frame CCD sensor captures images at 5212x3468 pixels with 14 bits/color in RAW mode.

STORAGE: SD/SDHC slot stores JPEG, DNG RAW, and RAW + JPEG files.

BURST RATE: Full-sized JPEGs (Fine mode), up to 8 shots at 2 fps; RAW (12-bit), up to 8 shots at 2 fps.

SHUTTER SPEEDS: 1/4000 to 8 sec, plus B (1/2-EV increments); shutter life not rated.

METERING: TTL metering, center-weighted at working aperture. EV 1–21 (ISO 320).

ISO RANGE: ISO 160–10,000 (in 1/3-EV increments).

FLASH: Hot shoe; Sync to 1/180 sec.

VIEWFINDER: Bright-line frame type with automatic parallax compensation, 0.68x magnification, and 47.1mm effective rangefinder base. Indicators simulate field for 35/135mm, 28/90mm, or 50/75mm lenses; manual or auto (6-bit) selection.

LCD: 2.5-inch TFT with 230,000-dot resolution; 5-step brightness adjustment.

OUTPUT: USB 2.0, mini HDMI video, composite video, analog audio, and Wi-Fi.

BATTERY: Rechargeable 14464 Li-ion, CIPA rating 350 shots.

SIZE/WEIGHT: 5.5x3.2x1.5 in., 1.4 lb with a card and battery.

STREET PRICE: $7,950, body only.

INFO: www.leica-camera.com

Bottom Line

If you enjoy shooting black-and-white film with a rangefinder, and if you have the means to purchase the M Monochrom, it certainly deserves your consideration.

Leica sometimes conducts events where curious shooters can give its cameras a try. If you're on the fence, it would be a good idea to avail yourself of such an opportunity. Just be sure that your bank account can handle the cost of this camera, because you might just fall in love with the M Monochrom the way we did. We wouldn't want you to wind up as heartbroken as we felt the day we had to send our borrowed test sample back.

—Philip Ryan

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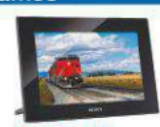

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LAB * LENS TEST

PENTAX-DA 50MM F/1.8

CONTINUED FROM PAGE 81

loud autofocus motor. With MF coupled with focus peaking, we were treated to unexpectedly welcome levels of focusing speed, precision, and assurance.

Though noisy and, on several Pentax bodies, prone to hunting, AF was fast on the K-01. The Quick Shift feature that permits manual focusing in AF mode worked less elegantly than on other lenses. The turning action was unusually stiff, causing us to suspect that we might be harming the focusing helicals.

On our optical bench, the lens produced Excellent sharpness and contrast numbers that were higher than those of Pentax's discontinued full-frame 50mm f/1.7—which this lens reminds us of—but slightly below those of the f/1.4.

In our DxO Analyzer 4.1 tests, with just 0.06% (Imperceptible) barrel distortion, the new lens outdid most recently tested classmates, with the exception of Tamron's exceptional (though relatively expensive) 60mm f/2 APS-C 1:1 macro lens, which showed 0.04% barreling.

While the Pentax's price is high by 50mm f/1.8 standards—$80 more than the comparable Sony—the lens is optically superior to most of the competition. If you can deal with the fortissimo buzz of its AF motor, you'll find a perfect tool for portraits, low-light scenes, street shooting, and more. —*Julia Silber*

SUBJECTIVE QUALITY FACTOR

Our standard lens test, SQF rates sharpness by print size

50 MM

Size	5x7	8x10	11x14	16x20	20x24
1.8	96.3	93.2	92.4	86.7	79.5
2.8	96.5	95.5	92.9	87.6	80.9
4.0	96.9	95.9	93.6	89.0	83.3
5.6	97.3	96.5	94.5	90.7	86.1
8.0	97.7	96.9	95.2	92.1	88.2
11.0	97.5	96.7	94.9	91.5	87.4
16.0	96.8	95.8	93.4	88.9	83.2
22.0	94.7	94.5	91.3	84.9	76.8

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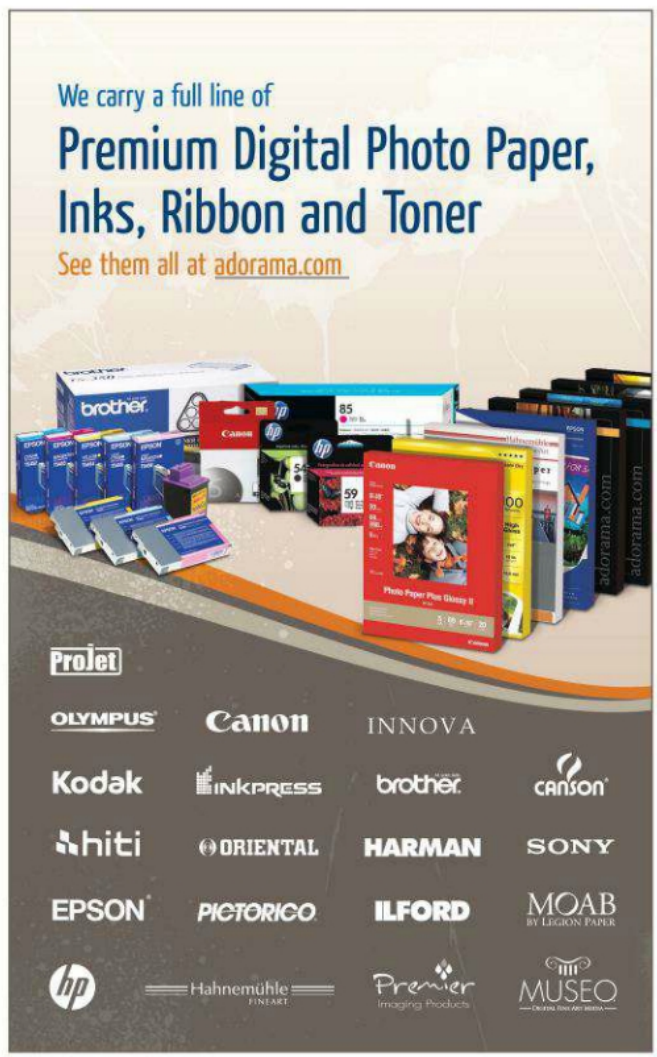

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The Flashpoint DG600 can be operated cord-free with an optional battery pack (far right), ideal when on-site electricity is unavailable.

FLASHPOINT DG600 DIGITAL AC/DC MONOLIGHT

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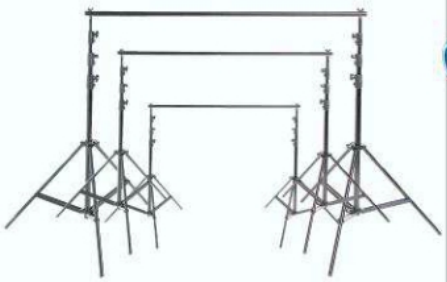
Bringing lights on location greatly expands a photographer's creative options, but their weight and bulk makes getting them there a struggle. Lessen your load with Adorama's new **FLASHPOINT** DG600 AC/DC Digital Monolight. It combines power source, controls, and flash head in a single unit—yet weighs just a few pounds and is *half* the size of comparable monolights.

Despite its compactness, our new strobe packs the power you need, with a pair of units steplessly delivering up to 600 watt-seconds of consistent 5600K light. What's more, a recycle time as fast as half a second and a flash duration as short as 1/1500 second mean you can shoot fast and with little risk of ghosting.

The **FLASHPOINT** DG600's big digital display makes settings easy to read, and its sturdy, fan-cooled housing features a secure, rubberized surface. Why pay more?

FLASHPOINT Easy-Shoot Solutions

Background Support System



The background stand comes with interlocking 4 section crossbar. and a handy carrying bag with compartments.

The top of the stand meets the crossbar there is a screw and wing nut to keep the crossbars secured to the stands.

Portable Stand	10' Stand	13' Stand
FPBS13B	FPBS10	FPBS13
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CONTINUED FROM PAGE 59

against two distinctly different background streetscapes.

While shooting, work like a sports photographer. "Move and think quickly," says Kober. "Dancers can be fast, so set an action-stopping shutter speed. They normally repeat routines, though, so it's not hard to anticipate what they will do next."

Among the crowds, watch your equipment to protect it from theft. "I try to shoot with others," Kober advises. "Get press credentials and permission to shoot in front of the barricades," which means better pictures and freedom from pickpockets. A letter from your local newspaper may be all you need for access.

The Gear to Bring

"I love the Rio Carnival, but Rio isn't the safest city in the world," says Levy. "You're safe inside the Sambadrome, but you have to be on your guard everywhere else." He carries one camera instead of two, and hides it when he can.

In fact, all three photographers we interviewed carry only one camera to limit their losses in case of a mugging. For lenses, Kober uses 16–35mm, 50mm, and 70–200mm f/2.8 VR II Nikkors on his Nikon D3. He also carries a Speedlight SB-800, but uses it only as a last resort. Levy carries the Canon counterparts (in focal length and speed) for an almost identical kit on his Canon EOS 5D Mark II. He leaves the tripod and monopod in his hotel room. "You have to be free to move," he says. For some venues, earplugs can also be helpful.

Which Carnival?

"Venice is my favorite," says Christian Kober. "The location is a dream, the venues usually offer open access, and the masked models are very willing to pose for you." They parade around waterfront piers and bridges, and in front of the 16th-century palazzi, while extravagant balls are underway, with their live orchestral music echoing down the streets.

PORT-OF-SPAIN, TRINIDAD
"I was drawn to these women and their charming smiles because their briliant yellow costumes evoked the bright tropical sun," says Cabanis.

The best costumes, like the one in our opening photo, are usually made by the people wearing them. For many, dressing up for the carnival is a hobby that they pursue for months each year.

For Levy, Rio is best. "I wasn't looking forward to Rio, because it had been photographed a million times, and I wasn't going to find anything new," he recalls. "But the experience itself was overwhelming. The noise, the music, the drums, and the level of excitement are like nothing else in the world. But it's exhausting. I can't tell you how many liters of water I drank that night."

KRISTIAN CABANIS/ROBERT HARDING

CARNIVALS
from New Orleans to India

Whether the festival is spelled Carnivale, Carnaval, Karneval, or even Mardi Gras, great photography and fun can be yours with a visit to any of these faves.

- **BINCHE, BELGIUM February 10–12** Dates to the 14th Century. (www.carnavaldebinche.be)
- **COLOGNE, GERMANY February 11** Begins 11 minutes after 11 p.m. (www.koelnerkarneval.de)
- **GOA, INDIA February 9–12** Started 500 years ago by the Portuguese. (carnivalgoa.com)
- **KINGSTON, JAMAICA February 15–April 7** Typically runs for the entire Easter season. (bacchanaljamaica.com)
- **NEW ORLEANS, LA February 12** Centered in the French Quarter. (www.mardigrasneworleans.com)
- **NICE, FRANCE February 15–March 6** Attracts over a million. (www.nicecarnaval.com/en)
- **PATRAS, GREECE January 17–March 17** Includes a treaure hunt. (carnivalpatras.gr)
- **RIO DE JANEIRO, BRAZIL February 8–12** Unimaginably loud and hot—bring earplugs and water. (riocarnival.net)
- **PORT-OF-SPAIN, TRINIDAD February 11–12** A mix of African and European influences. (gotrinidadandtobago.com)
- **VENICE, ITALY January 26–February 12** Its distinctive masks originated centuries ago when public partying was outlawed. (carnevale.venezia.it/?slang=en)

When it's over, it's common for participants to faint and collapse to the ground, leaving their elaborate costumes where they fell.

Cabanis recommends Trinidad. "The closer you get to the equator, the wilder the photo ops become. I like Trinidad for its color and liveliness. You can get so close to the dancers, that for photographers, it's just paradise."

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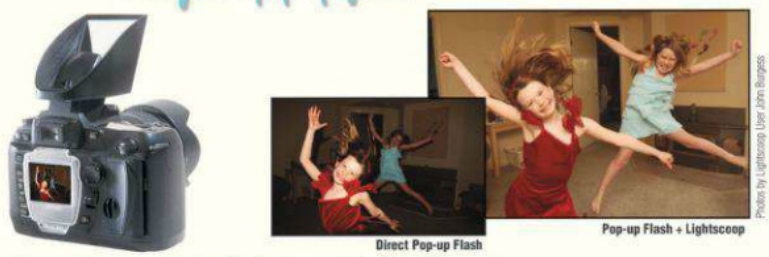

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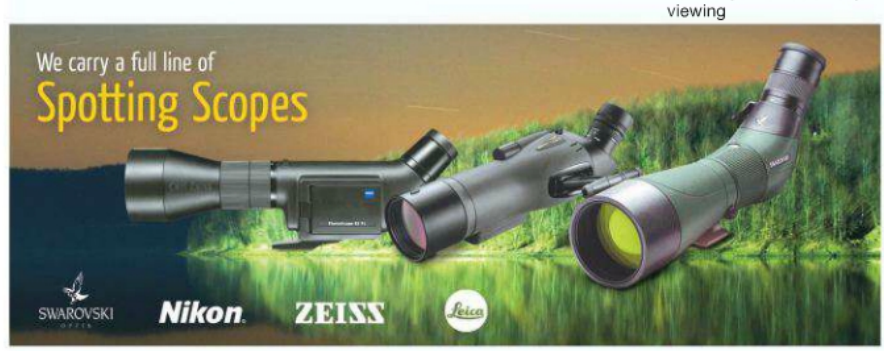

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GLITCHES & GREMLINS

WHEN USING A LENS ADAPTER don't expect everything to work as usual. Besides losing autofocus and auto aperture, your lens won't communicate EXIF data to the camera. And if that weren't enough, you might even experience firmware conflicts. For example, I've used my Nikon 14–24mm lens on my Canon EOS 5D Mark II with no problems, but when I upgraded to the 5D Mark III, working in live view was rendered impossible. The problem? The new firmware for the Mark III didn't like the data coming from the adapter's focus-confirmation chip. So I pried off the chip. Problem solved!

other popular camera systems fall somewhere between the Nikon and Canon systems in terms of adaptability, and Sony, Fujifilm, Olympus, Panasonic, Pentax, and Leica users will find many adapter options available. (See PopPhoto.com/lensadapters for a chart of adapter compatibility.)

Most recently, interchangeable-lens compacts (ILCs) have given new life to old (and new) rangefinder lenses: With no mirror and a shallow back focus, they can accept older legacy Contax, Leica, Canon screw-mount, and other classic rangefinder lenses, not to mention lenses for both current and older SLRs. As is usually the case, though, most adapters do not support autofocus on ILC bodies.

Adaptation Across Format

You aren't constrained to just adapting lenses to cameras of the same format. Many people cross between various formats including Four Thirds, APS-C, 35mm full-frame, medium-format, and even large-format systems.

It is easier to adapt down—to use a larger-format lens on a smaller-format body—than to adapt up. Smaller-format lenses are built with enough coverage only for the film or sensor they were designed for. So, if you use a smaller-format lens on a larger format body, you could end up with severe vignetting, or even a circular image.

On the other hand, when adapting a larger-format lens to your camera, you'll have a generous

image circle, but a narrower angle of view. Larger formats have larger image areas, and require lenses with longer focal lengths. So, while a wide-angle lens on a full frame DSLR might be 21mm, the equivalent field of view on a medium-format camera requires a 50mm lens, and on a 4x5 format, 90mm. But when you put the 50mm wide-angle medium-format lens on your DSLR, it stays a 50mm lens and offers a normal perspective. In effect, the widest medium-format lenses become normal lenses on a full-frame DSLR, whereas the widest lenses for large-format camera systems become short teles. On APS-C and Four Thirds cameras, these lenses have still longer focal length equivalents.

While the quality of many medium- and large-format lenses can be high, they tend to be heavier and more expensive than DSLR lenses. Furthermore, large-format lenses cannot be adapted to a DSLR unless attached to a special bellows adapter—although in doing so you gain access to a number of useful perspective and plane-of-focus camera movements such as tilt and shift. (You can also take advantage of the larger image circle of medium-format lenses and use them with bellows adapters on a DSLR for the same purpose.)

But for anything other than very precise critical work, you're probably better off buying a dedicated tilt-shift lens to gain these large-format camera movements on your DSLR, without the technical hassles of adapting.

Contributing Editor Ian Plant is a photographer, writer, and adventurer. His work has appeared in books and calendars, and he is the author of ebooks and digital-processing video tutorials. See his images at www.ianplant.com.

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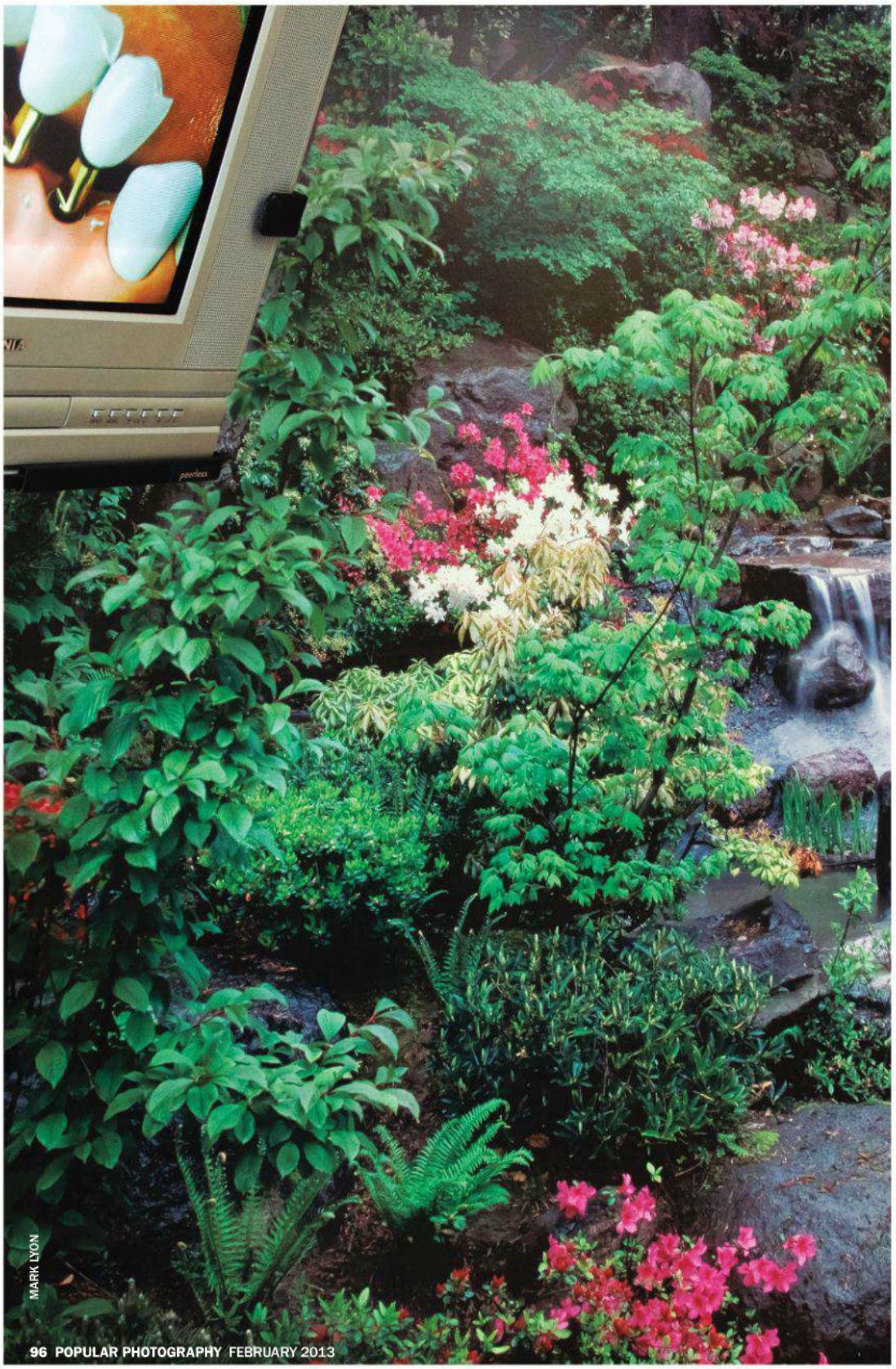
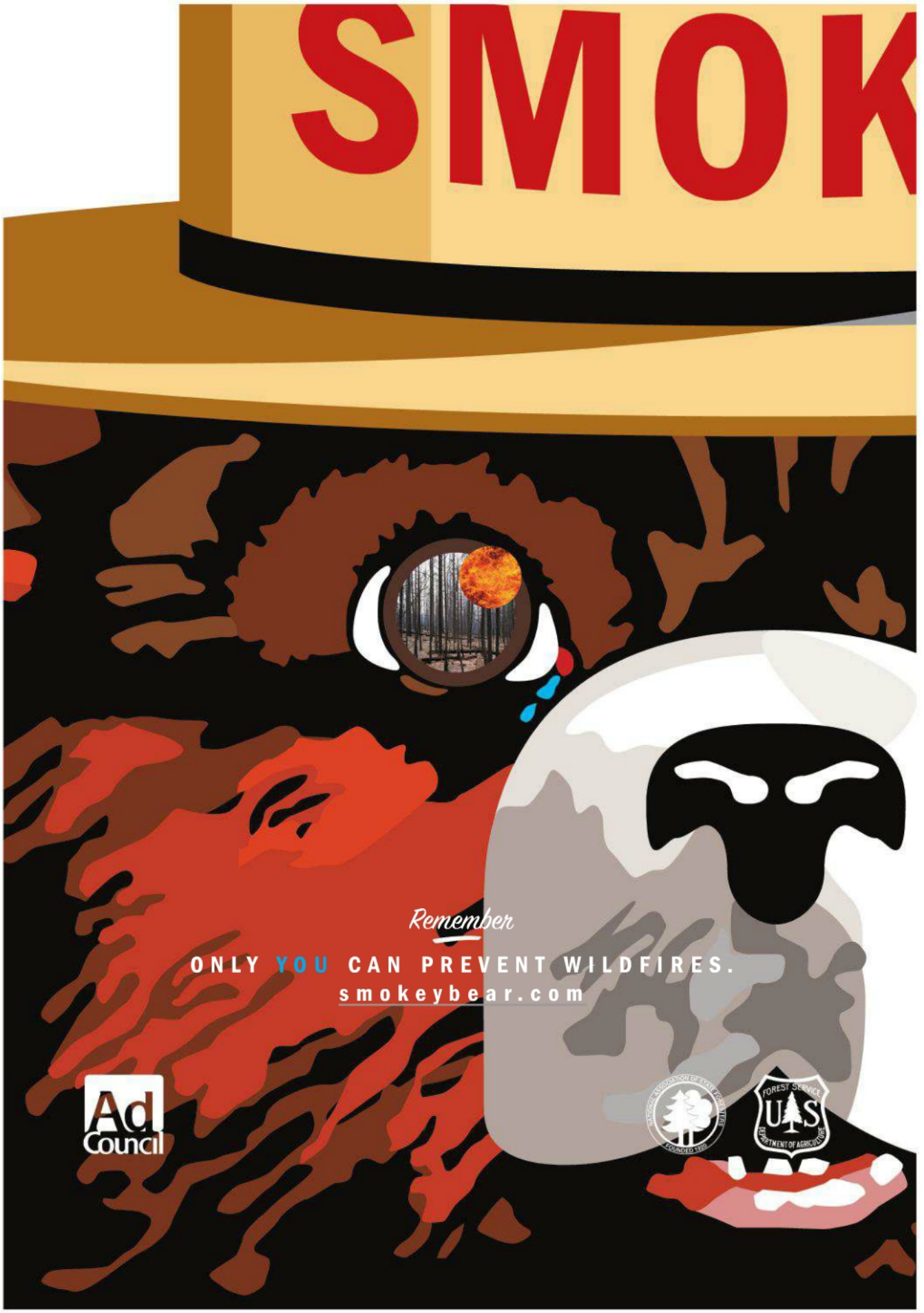


Mark Lyon captures walls meant to take you away

I BEGAN shooting landscape murals in mundane locations when another photo series led me into a laundromat. I noticed a bucolic scene hanging behind a folding station and was struck by its psychological component. You see these murals everywhere: in doctors' offices, gyms, even airports—always environments in which you want to put yourself somewhere else while you're there.

I began seeking these out, and a friend gave me a lead on a dentist's office. After I showed the dentist my work, he let me set up in this room. What interests me is the relationship between murals and the objects in front of them, and this office had a television mounted beside the mural, playing a demonstration of how caps are put on teeth.

The moment in the video here is right after the caps have been put on—you can even see the sutures. There's this contrast between a landscape meant to soothe you and a video that's actually kind of terrifying. *—As told to Lori Fredrickson*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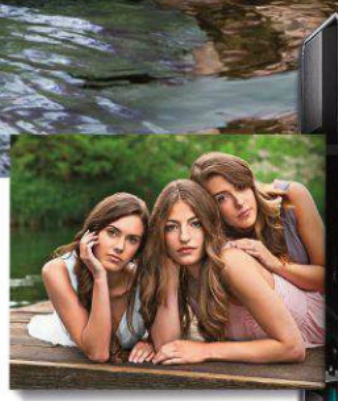
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